THE UNIVERSITY OF ALBERTA

COMPETENCIES OF PHARMACISTS IN ALBERTA

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

IN

VOCATIONAL EDUCATION

DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION

EDMONTON, ALBERTA

SPRING, 1986

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ISBN 0-315-30165-1

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DEGREE FOR WHICH THESIS WAS PRESENTED Master of Education

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "COMPETENCIES OF PHARMACISTS IN ALBERTA" submitted by HERBERT ABEL DIXON in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

The Faculty of Pharmacy and Pharmaceutical Sciences at the University of Alberta surveyed pharmacists in the Province of Alberta to obtain their opinions about the value of a list of selected competencies. The results were to be used as a guide for future curriculum development.

At the time of the survey there were 1798 registered pharmacists in Alberta. The sample consisted of the 1124 persons who returned completed questionnaires. The questionnaire contained lists of "should have" competencies, "must have" competencies and sites for instruction.

Respondents were requested to choose which "should have" competencies should be added to the practice of pharmacy, which "must have" competencies are most important to professional practice, which "must have" competencies are practiced least often, and where the competencies should be taught.

According to the study the following competencies should be added to the practice of pharmacy.

1. Prescribing selected drugs for minor ailments
2. Operating a drug information service
3. Designing dosage regimens based on prescribers' data
4. Managing drug therapy in selected chronic diseases

The competencies listed below were perceived by the practitioners to be the most important to successful professional practice.

1. Consulting with patients on the selection, use and effects of over-the-counter drugs

2. Applying the principles of good management practice to pharmacy operations

3. Applying principles of good management practice to pharmacy personnel

4. Applying principles of good management practice to pharmacy inventory control

5. Applying principles of good management practice to fiscal matters

6. Interpreting and evaluating the accuracy and completeness of prescription orders

7. Selecting appropriate ingredients, products, containers, brand and dosage form for drugs to be dispensed

8. Preparing medications by measuring, counting or transferring the prescription

9. Providing appropriate additional label information for the prescription to be dispensed

10. Preparing medication by accurately compounding the prescription

11. Performing drug control, storage and drug security functions involved in drug distribution

12. Communicating effectively with patients and customers

13. Communicating effectively with other health professionals

14. Complying with all pharmacy practice laws, drug laws, pharmacy practice regulations and drug regulations

15. Complying with voluntary standards of practice and codes of ethics

16. Demonstrating appropriate professional and ethical judgement in interpretation of laws and regulations

17. Identifying or locating appropriate drug information

18. Maintaining competencies through continuing education

The competencies listed below were identified by the practitioners as LEAST important to professional practice.

1. Providing first aid or emergency treatment

2. Providing poison control and treatment information

3. Evaluating the relative therapeutic worth of medical-surgical supplies and devices

4. Counselling patients about and fitting medical-surgical devices and supplies

5. Evaluating the chemical equivalency of drugs from different suppliers

6. Evaluating the bioequivalency of drugs from different manufacturers

7. Performing bulk compounding, manufacturing, or packaging of drugs to legal and professional standards

8. Evaluating the effectiveness of drug therapy

9. Monitoring drug therapy

10. Explaining the characteristics and procedures of pharmacy practice by types (role and setting) of pharmacy practice

11. Teaching or supervising pharmacist internes

12. Applying the principles of research design to the design of investigational studies

The respondents favored a combination of in-school and on-the-job as a teaching site for the competencies listed in the study.

ACKNOWLEDGEMENTS

The completion of this project would not have been possible without the continuing encouragement of Dr. Karel Puffer, my thesis supervisor. His dedication to excellence in teaching has been inspiring.

Dr. David Biggs has confirmed his friendship by suggesting the necessary revisions. Mrs. Gail Hall graciously made the thesis and the revisions appear on paper.

Ms. Adeline Pasichnyk and Dr. Leslie Lewchuk lent support throughout. Dr. Lewchuk was responsible for initiating this adventure.

The task of formatting and setting the framework for printing this thesis was ably and amiably performed by Mrs. Louiza Kotri.

Finally, to my family, associates, and friends, my gratitude for your patience, support and understanding.

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I. INTRODUCTION

HISTORICAL SETTING

Professional practice of pharmacy in the Province of Alberta has been based on a combination of on-the-job experience, or apprenticeship, and university education.

The Alberta Pharmaceutical Act was amended in 1926 to require a potential Alberta Pharmaceutical Association (APhA) registrant to have served not less than three years as a certified apprentice, to have received from the University of Alberta a certificate of attendance for two full terms and to have passed examinations prescribed by the School of Pharmacy (APhA Minutes, 1926).

Apprenticeship oriented the student to professional practice, while theory was primarily taught by the School of Pharmacy (1911-1954), the Faculty of Pharmacy (1954-1965), and the Faculty of Pharmacy and Pharmaceutical Sciences (1965-1985).

HISTORY OF APPRENTICESHIP 1927-1959

At the APhA annual meeting of 1927, the director of the School of Pharmacy commented on the value of apprenticeship by stating that "there can be no doubt that any student who has had a certain amount of apprenticeship is much better able to cope with some of the subjects offered

in the School of Pharmacy than one who has had no previous experience whatever." (APhA Minutes, 1927)

By June, 1936, the APhA had approved a training manual (Hurst, 1934) for apprentices (APhA Minutes, 1936). The manual emphasized psychomotor, cognitive and affective skills. For example:

> Do you feel you can give yourself over to your duties in Pharmacy, and in so doing, do you feel that you are giving full vent to your capabilities? If not, now is the time to stop and think. You must also ask yourself whether you like people. While we look upon Pharmacy as a science which is executed by means of a good technical training, it is also a business which demands that you understand the reasoning of the human mind and the vagaries of the human being. You must like people so that they will like you. You must like people in order to succeed (Hurst, 1934, Book 2, page 6).

The Council of the APhA reported on apprenticeship to the annual meeting of 1938. The importance of Hurst's manual (1934) was stressed as part of a structured study program:

> Your council realizes that it is a very good idea for apprentices to purchase these books, but at the same time very little advantage will be gained unless sufficient time is devoted to studying the same. In order to give the apprentice some incentive it has been suggested that examinations be set at suitable intervals on the material contained in these apprenticeships (APhA Minutes, 1938).

Regulations governing pharmacy apprenticeship in Alberta were published in the minutes of the annual meeting of the APhA in 1939. The regulations set out the procedures to be followed and when examinations would be held (APhA Minutes, 1939).

The type of instruction described in the 1939 apprenticeship regulations generally met the goals for Individually Prescribed Instruction.

The goals with respect to the learner are:

1. To enable each pupil to work at his own rate through units of study in a learning sequence.
2. To develop in each pupil a demonstrable degree of mastery.
3. To develop self-initiation and self-direction of learning.
4. To foster the development of problem-solving thought processes.
5. To encourage self-evaluation and motivation for learning.

(Joyce and Weil, 1972, p. 335)

HISTORY OF INTERNESHIP 1960-1969

The minutes of the annual meeting of 1960 recorded a discussion about the development of a more modern manual for the guidance of preceptors and apprentices. The previous manual by Hurst (1934) had fallen into disuse and so had the accompanying apprenticeship examinations. The new manual was expected to address the problems of preceptor performance and apprenticeship skills. At this time the term "apprenticeship", was replaced by the new term "interneship" (APhA Minutes, 1960).

The Interneship Training Committee reported to the annual meeting of the APhA that "experience gained makes for better qualified graduates" (APhA Minutes, 1962. p. 64).

In November 1968, the Council of the APhA received a report from the Interneship Training Committee. In its report the committee made the following recommendations among others:

1. That the present interneship program as it now exists be abolished and that it be replaced with a planned, practical training program.

2. That the participating preceptors be thoroughly familiarized with the aims, objectives and curriculum of the program prior to their receiving an intern.
3. That the interne appear before a board at the conclusion of the program and that he be orally examined on his proficiency in areas related to the program and that provision be made for repetition of the program by unsuccessful candidates (APhA Council Minutes, 1968).

In its final report to the council of the APhA in June 1969, the Interneship Training Committee recommended "that the standing committee strive to continually review . . . and revise the curriculum of the program, keeping abreast of changes and trends in the practice of the profession (APhA Minutes, 1969).

The APhA had therefore laid the groundwork for competency-based interneship curricula. Ten years later the Faculty of Pharmacy and Pharmaceutical Sciences began a competency-based curriculum review.

COMPETENCY-BASED CURRICULUM IN FACULTY OF PHARMACY & PHARMACEUTICAL SCIENCES

In 1979, the curriculum committee of the Faculty of Pharmacy and Pharmaceutical Sciences undertook the following review.

> A competency-based review of the core curriculum (that part of the curriculum which is designed to give pharmacists their basic level of knowledge and hence their basic level of competency) would result in this becoming a much more rationally based entity. Each pharmacist on graduation should be competent in areas which have been identified through a careful process of review of pharmacy practice in this province. However it is important to note that students will only have achieved a basic level of competence. In other words, this does not mean they will have achieved the pinnacle of competence but simply that they are competent to practice in the environment which exists in this province at this time. This clearly has important ramifications in the area of interneship and licensure and this will obviously have to be a

matter to be looked at in some detail by the Interneship Committee of the Alberta Pharmaceutical Association. The rational basis so developed will also provide an ongoing model readily amenable to change and available for continued assessment of the curriculum as the need arises (Appendix I).

In its report to the Faculty of Pharmacy and Pharmaceutical Sciences, the curriculum committee evaluated two forms of curriculum review.

1. Conventional review

   In this we assume that our present curriculum prepares a student to perform competently. We assume that the curriculum is in line with current pharmacy practice and that it has adapted to changes occurring within the profession. A curriculum review using this concept means looking at courses to see where there are areas of overlap, or where there are areas of omission, rectifying these situations, and then continuing the instructional process in the usual manner.

2. Review based on validated competencies

   This implies a careful review of the performance objectives of the basic, or core, curriculum to ensure that students who graduate demonstrate the level of professional competence and the competencies which the Faculty and the profession regard as essential.

   It has to be recognized that such a review assumes that a validated competency may be acquired in a number of ways. Thus, a given competency may be acquired by several courses supporting the development of one particular competency, a single course supporting the development of more than one competency or a single course supporting a single competency (Appendix I).

The curriculum committee of the Faculty of Pharmacy and Pharmaceutical Sciences proposed "that a series of carefully evaluated competencies be used as the basis for a comprehensive review of the present curriculum" (Appendix I), incorporating the competencies prepared by the College of Pharmacy of the University of Minnesota (Cyrs, Holloway and Grussing 1977). The opinions of practicing pharmacists and faculty mem-

bers would be sought on the validity of the competencies. Their opinions would form the basis for a review of the curriculum.

PROBLEM STATEMENT

The compounding tasks traditionally performed by the pharmacist have been primarily taken over by pharmaceutical manufacturing companies. Pharmacists now engage in the largely technical functions of counting, pouring and labelling products.

Expectations of the public are changing. Consumers are increasingly well informed and expect to receive current, relevant information about their drugs. The pharmacist aspires to a clinical role which involves the analysis, interpretation and communication of drug information to patients and other health care providers. The proliferation of drug products has placed the responsibility on the pharmacist of differentiating between products with similar but very specific actions, identifying adverse drug reactions, counselling about effects and side effects, and coping with a deluge of information from manufacturers, researchers, and regulatory agencies.

The literature is full of references to the need for addressing the lack of congruence between what is taught to the student and what is expected from the practitioner (Lowenthal 1979).

As far as the writer was able to determine, prior to 1979 no formal attempt had been made by either the Alberta Pharmaceutical Association

or the Faculty of Pharmacy and Pharmaceutical Sciences to obtain input from pharmacy practitioners for development of a core curriculum.

A validated competency-profile was considered to be an essential first step in designing a curriculum that would reflect the needs expressed by practicing pharmacists.

To establish a competency profile for Alberta, the opinions of practicing pharmacists in Alberta were sought. A list of "MUST HAVE" and "SHOULD HAVE" competencies, that were validated in a study at the University of Minnesota, (Cyrs, Holloway and Grussing, 1976), were circulated as a questionnaire to registered pharmacists in Alberta. "MUST HAVE" competencies were defined as what a pharmacist does as a competent practitioner. "SHOULD HAVE" competencies described those activities which pharmacists, other health professionals, and consumers feel a pharmacist should be performing (Cyrs, Holloway and Grussing, 1976).

The Alberta pharmacists were asked to rank the competencies for the Curriculum Committee of the Faculty of Pharmacy and Pharmaceutical Sciences.

This study analysed the opinions and reactions of practicing pharmacists in the Province of Alberta to the list of "MUST HAVE" and "SHOULD HAVE" competency statements. The results of this study were intended to provide a validated competency-profile for pharmacists in Alberta.

PURPOSE OF THE STUDY

The purpose of this study was to examine data collected from practicing pharmacists in Alberta in 1979. The data were analysed to answer the following questions:

1. From a list of "SHOULD HAVE" competencies, which ones should be added to the education and training of the pharmacist?
2. From a list of "MUST HAVE" competencies, which ones are considered to be the MOST important to the practice of pharmacy?
3. From a list of "MUST HAVE" competencies, which ones are practiced LEAST often by pharmacists in Alberta?
4. Where should these competencies be taught?

SIGNIFICANCE OF THE STUDY

This study will help the Faculty of Pharmacy and Pharmaceutical Sciences of the University of Alberta evaluate a core curriculum for training pharmacy students.

The results will also be used by the Continuing Education Division of the Faculty of Pharmacy and Pharmaceutical Sciences for designing continuing education programs.

LIMITATIONS

This study had the following limitations:

1. It was limited to the questions contained in the questionnaire sent to practicing pharmacists in the Province of Alberta in 1979.
2. It was limited to the competencies established by the University of Minnesota in 1976.
3. It was limited to pharmacists registered with the Alberta Pharmaceutical Association as of August 1979.
4. It was limited by the accuracy of participants' responses to items in the questionnaire.

GENERALIZABILITY

The results could be generalized to other populations of practicing pharmacists, to the extent that the characteristics, opinions, and perceptions of pharmacists elsewhere resemble those of pharmacists in Alberta in 1979. This study is generalizable to all pharmacists who practice in the Province of Alberta. The study may be generalizable to graduates of the pharmacy-degree programs of accredited universities in other provinces.

SUMMARY

This chapter outlined the historical setting in which the need evolved for a competency-based curriculum in the Faculty of Pharmacy and

Pharmaceutical Sciences. Some background was given on the relationship between the experiential learning of apprenticeship, and classroom instruction in the Faculty of Pharmacy and Pharmaceutical Sciences. The chapter also included the purpose, problem statement, limitations, and generalizability of the results.

II. LITERATURE REVIEW

INTRODUCTION

The Curriculum Committee of the Faculty of Pharmacy and Pharmaceutical Sciences proposed on May 17, 1979, that a series of carefully evaluated competencies be used as the basis for a comprehensive review of the pharmacy curriculum. The Committee stated:

> This would represent a more rational approach than a simple review of the present course offerings. The main reason for holding this view is that unless the Faculty has developed a series of overall aims and objectives for the program it is offering within the University, then it is not possible to conduct a rational review of the curriculum. The Curriculum Committee has assumed that there is at present an overall aim and purpose to the program currently in operation. however, it has been unable to clearly identify this in the documentation which has been made available to it so far (Appendix I).

The goals of the present program, according to the Committee's report, were to graduate competent pharmacists (Appendix I).

The College of Pharmacy at the University of Minnesota (Cyrs, Holloway, and Grussing 1977) validated a list of competencies for contemporary practice which were defined as "MUST HAVE" and "SHOULD HAVE" (Appendix I). The competencies were derived from a careful study of the activities of professionals practicing in a variety of community and hospital environments, and were the tasks that a pharmacist actually performed in his or her day-to-day practice of the profession.

The Curriculum Committee of the Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta reviewed the competencies pre-

pared by the College of Pharmacy of the University of Minnesota and decided to try and determine whether they were valid for Alberta (Appendix I).

Validated competencies were to be used as the basis for a review of the core curriculum, thus enabling the Curriculum Committee to relate them to the performance goals and objectives of the core courses.

The Curriculum Committee maintained that each pharmacist on graduation should be competent in tasks which have been identified through a careful review of pharmacy practice in this province (Appendix I).

COMPETENCY BASED EDUCATION

Schmieder (1973) called competency-based education a significant lever for educational reform. He stated that competency-based education is "a collection of evidence verifying the candidate's ability to perform" and "the best management tool available to today's educators" (p. 172).

Gale and Pol (1975) made the statement that "no group can claim professional standing without explicit statements about what constitutes competence in that field and the means by which competence can be obtained and assessed" (p. 20).

Grant, et al. (1979) concluded that even if students were required to show they had mastered the content of the curriculum, students were

not required to demonstrate competence in most professional tasks. Assumptions were made by educators that exposure to the educational program resulted in the absorption of the necessary competencies and virtues. Grant et al. (1979) pointed out that before the 1960s few follow-up studies were made to determine how well graduates performed and "competence could thus be assumed for every physician or lawyer who avoided malpractice suits, every nurse who kept a job, all social workers who were not reprimanded, and all pharmacists who ran profitable drug stores" (pp. 206-207).

Brooks (1977) suggested that there was often inadequate input from practitioners when new educational programs were developed.

Dawson (1979) commented that quality control was important to the field of education because the increasing competition for funding at the post-secondary level made a systematic approach to curriculum development necessary.

OCCUPATIONAL ANALYSIS

Many of the problems associated with competency-based education seemed to stem from an incomplete understanding of how to describe competencies, and how to develop curricula that would teach those competencies (Pottinger and Goldsmith, 1979, pp. 25-37).

Cyrs (1976) stated that most competency statements are "generally not evaluated beyond a specific institution to determine if they have a

broad base of support with practitioners" (p. 1). He pointed out that this deficiency contributed to the problem of "educating a pharmacy practitioner consistent with a role evident in current practice and with those revitalized and new roles in drug therapy which are not currently being met by other health professionals" (p. 1).

Chalmers and Trinca (1983) suggested that standards of practice represented the essential elements which should be common to the practice of pharmacy in all environments (p. 7-12). They also stated that there were barriers which placed restrictions on achievement of the purposes of contemporary pharmacy services. These were barriers within the profession, barriers within society, and barriers within pharmacy education. The authors stated that there was a

> lack of generally accepted models or plans for pharmacy schools to work in a facilitating manner with practicing pharmacists and local, state and national organizations and a lack of general agreement between pharmacy educators and practitioners concerning basic knowledge and competency needs for entry into contemporary pharmacy practice (p. 16).

Chalmers and Trinca (1983) went on to make recommendations to help teachers and practitioners participate jointly in preparing students for practice through a combination of classroom instruction and experiential learning.

Adams (1975), in his work on the DACUM (Developing A CurriculUM) system developed a competency chart which measured observable behaviour. The rating scale attempted to evaluate performance on a scale of 0 - 6 where level 3 was described as "can perform this task satisfactorily without assistance and/or supervision" (p. 5).

Manuel and Deane (1976) described a five-phase system for the development of competency-oriented training programs. The authors emphasized that a systematic, competency-based approach to learning can be efficient, effective, and self-fulfilling.

Butler (1972) developed a Training System Development Process that included a step-wise approach to developing a curriculum. One of the steps was task analysis which Butler described as both the behavioural characteristics and the job requirements (p. 72). He claimed that the best source for task analysis is a "sampling of the on-the-job worker" (p. 72).

COMPETENCY DEFINITION

The College of Pharmacy at the University of Minnesota developed a definition for competency:

> In this project 'competency' is defined as 'an intellectual, attitudinal, and motor capability, derived from a specified role and setting, and stated in terms of performance as a broad class or domain of behaviour' (Cyrs, Holloway, Grussing 1976, p. 1).

COMPETENCY-BASED PHARMACY EDUCATION

According to Lowenthal (1977), essential tasks and activities can be determined by using an existing job description and then interviewing various practitioners within the same general occupational group. Hospital pharmacists, community pharmacists, and clinical pharmacists are asked to describe the tasks that they carry out in the performance of their duties. If enough individuals are surveyed, and the tasks are

matched up, the researcher can develop an inventory of task statements that can be included in a competency statement. Lowenthal (1977) pointed out that competency statements can be divided into sub-competency statements and eventually into instructional objectives. Lowenthal (1977) further described competency-based education as "an educational system which assures student performance of specified needed tasks that will allow the student to function successfully in society" (p. 309) and gave the following reasons why a competency-based approach is important in professional education.

1. It is based on outcomes or performance in the real world practice setting rather than on what was taught or how it was taught.
2. It more accurately reflects professional and societal needs.
3. It eliminates tasks no longer performed.
4. It emphasizes professional goals and standards.
5. It allows for diversity and differentiation of functions.
6. It deals not only with facts and skills, but also with complex functions (including attitudes), so that it can become holistic.
7. It helps students manage change and anticipate future needs and functions.
8. It allows the faculty to institute changes in curricula in a progressive, systematic manner.
9. It simplifies grading procedures. (p. 309)

McConnell (1972) stated:

> A comprehensive analysis of practicing pharmacists can lead not only to identification of their present levels of retained and acquired knowledge and their professional attitudes, skills, and practices, but also to the elicitation of their real needs rather than their transient wants or desires (p. 634).

Cyrs, Dobbert and Grussing (1976) suggested that the committee defining needs should include faculty, practitioners, students, other health professionals, members of regulatory or government agencies and the general public.

The competencies required by a clinical pharmacist were described by Miller (1974). He listed five major groups of competencies that are necessary for satisfactory job performance.

1. professional practice competencies
2. communication competencies
3. educational competencies
4. management competencies
5. personal characteristics (p. 449)

For each of these competencies Miller (1974) provided specific criteria that defined the professional practice abilities of the pharmacist.

Kalman and Schlegel (1979) listed competencies for pharmacists who fulfilled the basic responsibilities of the profession. The four major areas of responsibility of pharmacists were: general management and administration of the pharmacy; activities related to processing the prescription; patient-care functions; and education of health-care professionals and patients. For each of these areas, responsibilities and tasks were identified. Findings from a national study provided the basis for the development of the standards (ERIC DOCUMENT ABSTRACT, Reproduction #221-072 pp. 2-16).

Yanoff and Seitchik (1978) divided competencies into two groups:

1. Product competencies ("ready and comprehensive knowledge of drugs, their action and use").
2. Process competencies ("competencies needed to serve and service both group and society needs") [p. 301 .

The authors noted that, while the product competencies were already being included in the curriculum of the Philadelphia College of Pharmacy

and Science, the process competencies - the ones needing most attention by the faculty - were not. The authors then defined what a competent pharmacist should be able to do (pp. 301-303).

Munson (1977) listed the competencies that the Faculty of the College of Pharmacy at the University of Kentucky felt each student should have upon graduation (pp. 172-175).

During 1977-78 the College of Pharmacists in British Columbia described competencies that would provide a basis for renewal of licensure (Fielding, et al. 1981). The authors included competencies pertaining to the prescription, to legal requirements, and to the sale of non-prescription medications removed from public access (pp. 28-30).

Lowenthal (1978) used a workshop/retreat setting to develop competency statements for a baccalaurate program in pharmacy. Competencies were developed and divided into must have and should have groups. Lowenthal (1978) suggested that "these statements will be similar to educational objectives, and can be used by faculty as guides to course content" (p. 30).

Silzer (1978) identified assessment procedures to determine whether individual pharmacy students met the training standards and if the curriculum was providing sufficient training for students generally.

Gagnon (1978) suggested that "pharmacists in practice need training and competencies in basic management techniques and communication

skills" (p. 411). He went on to describe how these competencies could be implemented in a step-wise fashion:

1. Educate the pharmacy students in the basic competencies of the administrative and social sciences.
2. Reinforce these competencies with practical education, starting 2 to 3 years after graduation and periodically thereafter (p. 411).

Wurster (1980) described the use of competencies in a revision of the curriculum of a pharmacy practice laboratory. Wurster listed those competencies which permitted her to integrate "past informal objectives of the course, instructor's knowledge of performance requirements for succeeding courses, and then for the practice of the profession, and competency compilations from the literature" (p. 261).

Neil (1980) designed a minimum standards document to ensure "competency, consistency, and continuity in the delivery of pharmacy services" (p. 70). These competencies outlined the minimum expectations of the pharmacists by management. Neil described the outcome of this competency-based standards program as follows:

> The department managers believe that the minimum standards document has proved to be an excellent management tool in coordinating individual employee contributions in one cohesive program (p. 73).

Schneider, Fudge, et al. (1981) proposed a competency-based advancement program for pharmacists in which advancement is based on five competency levels. The authors outline the criteria for placing and promoting pharmacists from one level to another (pp. 1131-1334).

Kayne (1981) argued that giving students experience in a practice environment will inject reality into the curriculum, without compromising academic quality (p. 345).

Lowenthal (1977) proposed a competency-based curriculum model for pharmacists in training. He observed that until the curriculum has been designed teaching time cannot be assigned to various topics. Only then can choices be made and priorities established to ensure the most efficient use of teaching resource. The main steps in developing a competency based curriculum plan according to Lowenthal (1977) were:

1. Determine what you want the students to be able to do.
2. Determine what they must learn to perform the designated competencies.
3. Evaluate student performance.
4. Revise when and where needed to strengthen the curriculum (p. 313).

Kayne (1981) maintained the validity of competency-based curricula as follows:

> If you want to develop a good experiential training program, you need to know where it is you are going, how you will get there, and how it is that you will know that you have arrived . . . to the extent you are successful in doing that, your program will have direction, continuity, and objectivity (p. 345).

FOLLOW-UP CURRICULUM STUDIES

This follow-up study was used to validate competencies of pharmacists in Alberta. Best (1970) defined the follow-up study as a survey of graduates.

> The study is concerned with what has happened to them, and what has been the impact of the institution and its programs on them. By examing their status or seeking their opinion, one may get some

> idea of the adequacy or inadequacy of the institution's program. Which courses, experiences, or treatments prove to be of value? Which prove to be ineffective or of limited value? Studies of this type enable an institution to evaluate aspects of its program in light of actual results (pp. 134-135).

Gay (1976) provided a reason for follow-up studies:

> They are often conducted by educational institutions for the purpose of internal or external evaluation of their instructional program (p. 127).

Hayman (1976) emphasized that follow-up studies are often the only means by which "opinions, attitudes, suggestions for improvements of instruction and other such data can be obtained" (pp. 65-66).

Traditionally questionnaires have a low rate of return. Best (1970) suggested that a better rate of return might be expected:

> If one is dealing with a group of respondents who have a genuine interest in the problem under investigation, who know the centre, or have some common bond of loyalty to a sponsoring institution or organization . . . the questionnaire has unique advantages if properly constructed and administered (p. 162).

As an incentive the Division of Continuing Education of the Faculty of Pharmacy and Pharmaceutical Sciences awarded two continuing education units to each member who returned the completed questionnaire. The regulations of the APhA require each practicing pharmacist to acquire forty-five continuing education units over a three-year period in order to maintain licensure and the right to practice.

At the time of the study there were 1978 members of the Alberta Pharmaceutical Association. 1124 questionnaires were returned, a 62.5%

response. Kerlinger (1967) stated that mail-out questionnaires have a return rate of 50% to 60% (p. 397). Allen (1980), however, claimed "you can anticipate a response of perhaps 30 percent to 40 percent" (p. 56).

Mackie (1981) described factors limiting the validity and reliability of a mail-out questionnaire when used for data collection:

1. Statements on the questionnaire are subject to misinterpretation by the participants.
2. Time could be a factor in completing the questionnaire.
3. There is the possibility of a low rate of return.

The advantages of a mail-out questionnaire are these:

1. It can be easily distributed to those selected to participate in the study.
2. It is relatively inexpensive to reproduce.
3. It can be used to collect objective data.
4. It can be prepared so that it is free of researcher bias (p. 71).

SUMMARY

In this chapter the literature on competency, related to competency-based pharmacy education, and follow-up studies was reviewed.

III. RESEARCH METHODS AND DATA ANALYSES

INTRODUCTION

The research methods used to complete this study are described in this chapter. A description of the questionnaire, the population, the data collection, the data analyses, and the scope of the study is included.

BACKGROUND

In August of 1979, the Curriculum Committee of the Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta mailed a questionnaire to all the members of the Alberta Pharmaceutical Association. The questionnaire contained both "MUST HAVE" and "SHOULD HAVE" competencies. In the covering letter, the Committee asked each practicing pharmacist to evaluate his or her practice of the profession by responding according to their day-to-day experience. This process would allow the membership of the profession to have input into the curriculum review. The Curriculum Committee described its responsibility as: "to revise the basic curriculum to ensure that graduating students are competent to practice their chosen profession" (Appendix I).

SCOPE OF THE STUDY

The study surveyed all pharmacists practicing in Alberta to determine their opinions and reactions to a list of competency statements.

INSTRUMENTATION

The questionnaire was designed by Dr. Biggs of the Faculty of Pharmacy and Pharmaceutical Sciences, under the direction of the Curriculum Committee of the Faculty.

Each competency was evaluated by using three questions:

1. Do you perform this function or skill?

   a. Never
   b. Rarely ..... once a month or less
   c. Occasionally ..... once a week
   d. Often ..... daily
   e. All the time ..... major role or function in your environment

2. Should this function or competency be taught?

   a. In school only
   b. On the job only
   c. Acquired through experience only
   d. Taught both in school and on the job
   e. Taught in school, on the job and acquired through experience

3. How important is this particular function or competency in your environment?

   a. Of no importance
   b. Of some importance
   c. Useful
   d. Very important
   e. Essential

The competencies were grouped as follows:

1. Biological and chemical equivalency - 6 questions
2. Emergency practice - 14 questions
3. Management - 12 questions
4. Drug information and community health - 26 questions

5. Prescription related - 33 questions
6. Over-the-counter medications and practice - 19 questions
7. Communication - 6 questions
8. Family planning - 12 questions
9. Drug studies and investigations - 11 questions
10. Design and initiate therapy - 26 questions
11. Ethics and laws - 9 questions
12. Teaching, studying, and ongoing education - 8 questions

Eighteen "SHOULD HAVE" competencies were included by the curriculum committee as potential competencies or functions. These competencies were evaluated using an additional question:

1. Should this function or competency become part of pharmacy practice?
   a. Yes
   b. No
   c. Maybe

All competencies were adapted from a study done at the University of Minnesota (Cyrs, Holloway and Grussing 1977).

ASSUMPTIONS

It was assumed:

1. that the competencies identified in the questionnaire were broad enough to represent accurately the scope of pharmacy practice in the Province of Alberta.

2. that those who responded to the questionnaire had sufficient experience and knowledge of the practice of pharmacy to be able to relate the content of the questionnaire to their profession.
3. that the questionnaire used possessed both validity and reliability.
4. that this instrument would reflect accurately the views and opinions of the respondents at the time of the study.
5. that the characteristics of those who completed the questionnaire were representative of the entire population.
6. that practicing pharmacists in the Province of Alberta had similar understanding and perceptions of the competencies required in the day-to-day practice of the profession.
7. that the responses to the questionnaire were a 'true' indication of respondents' opinions.
8. that the respondents' reactions to the series of questions were representative of the opinions of practicing pharmacists in the Province of Alberta.

POPULATION

The population for this study was 1,798 pharmacists registered with the Alberta Pharmaceutical Association on August 1, 1979. 1124 responses out of a possible 1798 were received, a 62.5% return.

COLLECTION OF DATA

The questionnaire was mailed to all members of the Alberta Pharmaceutical Association. The first page of each questionnaire identified

the objectives of the study and explained the importance of developing a competency-based curriculum for the Faculty of Pharmacy and Pharmaceutical Sciences (Appendix II).

DATA ANALYSES

The purpose of this study was to examine the data collected in 1979 from pharmacists practicing in Alberta. The data were analysed to answer the following questions:

1. From a list of "SHOULD HAVE" competencies, which ones should be included in the education and training of the pharmacist?
2. From a list of "MUST HAVE" competencies, which ones are considered to be the MOST important to the practice of pharmacy?
3. From a list of "MUST HAVE" competencies, which ones are practiced LEAST often by pharmacists in Alberta?
4. Where should the competencies be taught?

Data were entered into the University of Alberta Computing Services computer, and were analysed with the assistance of personnel from the Department of Educational Research Services, Faculty of Education, using the Statistical Package for the Social Sciences.

The observations, findings, conclusions and recommendations were formulated from these analyses.

SUMMARY

This chapter has described the questionnaire, the assumptions, the procedures used for data collection, the population, and the methods of analysis.

IV. FINDINGS

ADDED COMPETENCIES

The competencies in Tables 1 to 4 were selected by over 50% of respondents to be ADDED to the practice of pharmacy. The abbreviation "o.t.j." means on-the-job.

RETAINED COMPETENCIES

The competencies listed in Tables 5 to 23 are those which pharmacists considered to be MOST IMPORTANT to professional practice. The questionnaire requested replies under the headings: "no importance, some importance, useful, very important, essential". The categories were reported in the tables by collapsing "no importance" and "some importance" into "not important" (abbreviated to "not imp."). Similarly, "very important" and "essential" were combined into "important" (abbreviated to "imp."). "Response" was abbreviated to "resp." The abbreviation "o.t.j." means on-the-job.

LEAST IMPORTANT COMPETENCIES

The following competencies, listed in Tables 24 to 35, were those LEAST often performed by pharmacists practicing in Alberta. The questionnaire categories were: "never, rarely, occasionally, often, all the time". The responses were collapsed from "never" and "rarely" to "rarely", and from "often" and "all the time" to "all the time". "Occa-

sionally" was abbreviated to "occas" in the tables, and "response" was abbreviated to "resp."

TABLE 1

Prescribing selected drugs for minor ailments

Respondents	number resp.	yes %	no %	maybe %
Total responses	1124	78.6	8.8	12.6
Males	579	75.8	9.3	13.3
Females	545	81.3	6.7	11.9
Rural community pharmacists	377	79.78	6.38	12.48
Urban community pharmacists	551	78.75	9.35	10.85
Rural hospital pharmacists	27	75.16	2.5	22.3
Urban hospital pharmacists	70	67.7	10.05	22.3
Decade of registration				
1930s	14	64.3	14.3	21.4
1940s	68	63.2	10.3	26.5
1950s	196	76.0	10.2	13.8
1960s	259	74.9	9.3	13.5
1970s	584	82.9	6.0	10.1

No response was received from 1.1% of the pharmacists.

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.8	14.1	6.9	78.2

Over three-quarters of the respondents felt that prescribing selected drugs for minor ailments should become part of professional practice. Female pharmacists and rural community pharmacists placed the highest value on this skill. Pharmacists who registered in the 1970s were most in favor of adding the competency, and those who registered in the 1930s were least in favor. Over 78% of all respondents felt that this competency should be taught both in school and on-the-job.

TABLE 2

Operating a drug information service

Respondents	number resp.	yes %	no %	maybe %
Total responses	1124	67.3	4.9	27.8
Males	579	62.5	5.7	30.6
Females	545	72.5	2.2	24.8
Rural community pharmacists	377	64.8	4.6	30.6
Urban community pharmacists	551	63.1	5.6	31.3
Rural hospital pharmacists	27	96.0	0.0	4.0
Urban hospital pharmacists	70	88.2	0.0	11.8
Decade of registration				
1930s	14	84.3	7.1	28.6
1940s	68	55.9	4.4	38.2
1950s	196	58.7	5.6	34.2
1960s	259	59.1	6.6	32.8
1970s	584	75.3	2.1	22.3

No response was received from 0.9% of the pharmacists.

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	24.8	14.9	60.0

Rural and urban hospital pharmacists were most in favor of operating a drug information service, while nearly one-third of all community pharmacists were undecided. Ten percent fewer males than females felt that a drug information service should be an added skill. Sixty percent of all pharmacists wanted this competency taught both in school and on-the-job.

TABLE 3

Designing dosage regimens based on prescribers' data

Respondents	number resp.	yes %	no %	maybe %
Total responses	1124	54.8	15.9	28.7
Males	579	51.8	18.1	28.3
Females	545	57.4	12.5	29.2
Rural community pharmacists	377	53.1	18.1	27.9
Urban community pharmacists	551	49.2	17.7	30.9
Rural hospital pharmacists	27	80.8	0.0	16.4
Urban hospital pharmacists	70	71.0	0.0	29.0
Decade of registration				
1930s	14	64.3	14.3	21.4
1940s	68	39.7	25.0	35.3
1950s	196	51.5	15.3	30.1
1960s	259	49.8	19.3	29.3
1970s	584	59.2	12.3	27.6

No response was received from 1.4% of the pharmacists.

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.7	37.3	11.2	50.8

Most rural and urban hospital pharmacists believed that they should design dosage regimens based on prescribers' data. None of the pharmacists in these two groups wanted the competency excluded from practice. Male pharmacists and rural community pharmacists valued the competency least. Urban community pharmacists were the most undecided. 1940s pharmacists valued the new competency lowest, while the 1970s group valued it highest. The results showed that 50.8% of all pharmacists wanted the competency taught both on-the-job and in school while slightly over one-third wanted dosage regimens design taught in school only.

TABLE 4

Managing drug therapy in selected chronic diseases

Respondents	number resp.	yes %	no %	maybe %
Total responses	1124	57.7	12.3	29.1
Males	579	54.9	14.9	29.0
Females	545	60.6	9.5	29.2
Rural community pharmacists	377	57.6	10.5	29.4
Urban community pharmacists	551	54.3	15.5	28.8
Rural hospital pharmacists	27	83.3	0.0	16.7
Urban hospital pharmacists	70	71.5	1.2	27.3
Decade of registration				
1930s	14	50.0	21.4	28.6
1940s	68	38.2	17.6	44.1
1950s	196	52.6	15.3	30.1
1960s	259	51.7	13.9	33.2
1970s	584	64.4	9.8	25.2

No response was received from 0.9% of the pharmacists.

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.6	29.9	7.8	61.7

The majority of pharmacists want to manage drug therapy. Rural hospital pharmacists were the specialists most in favor of adding this competency to the practice of pharmacy. The largest group of registrants by decade who would NOT add the competency to practice, was from the 1930s while those registered in the 1970s were the largest group who would. Nearly two-thirds (61.7%) of all pharmacists felt this competency should be taught both in school and on-the-job.

TABLE 5

Consulting with patients on the selection, use and effects of over-the-counter drugs

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.3	82.1	10.2	7.4
Males	579	0.5	82.7	11.4	5.4
Females	545	0.0	81.5	9.0	9.6
Rural community pharmacists	377	0.0	87.8	9.4	2.8
Urban community pharmacists	551	1.3	87.2	8.5	3.0
Rural hospital pharmacists	27	0.0	31.6	34.0	34.4
Urban hospital pharmacists	70	0.0	43.1	13.7	43.2
Decade of registration					
1930s	14	0.0	78.6	14.3	7.1
1940s	68	1.5	61.7	26.5	10.3
1950s	196	0.5	80.1	13.6	5.6
1960s	259	0.4	79.2	10.8	9.6
1970s	584	0.0	86.5	6.8	6.7

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	3.4	3.2	83.1

Over eighty percent of all pharmacists valued medication counselling highly. The groups which gave the highest value to the competency were rural community pharmacists, and those who registered in the 1970s. By contrast, the competency was not important to nearly half of the urban hospital pharmacists. The results showed that most pharmacists wanted the competency taught both in school and on-the-job.

TABLE 6

Applying the principles of good management practice to pharmacy operations

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	79.2	12.5	7.8
Males	579	0.7	85.3	10.0	4.0
Females	545	0.2	73.0	15.0	11.7
Rural community pharmacists	377	1.0	85.7	9.4	3.9
Urban community pharmacists	551	1.2	77.7	14.9	6.2
Rural hospital pharmacists	27	0.0	73.6	19.8	6.6
Urban hospital pharmacists	70	3.4	63.6	10.1	22.9
Decade of registration					
1930s	14	0.0	85.7	7.1	7.1
1940s	68	0.0	91.2	5.9	3.0
1950s	196	1.0	86.2	8.7	4.1
1960s	259	0.4	80.7	12.0	6.9
1970s	584	0.3	74.9	14.9	9.9

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.5	1.7	9.0	88.8

Good management practices applied to pharmacy operations were most important to pharmacists who registered in the 1940s. Urban hospital pharmacists were the largest group who did NOT feel that this competency was important. The majority of all respondents were in favor of this competency being acquired both in school and on-the-job.

TABLE 7

Applying principles of good management practice to pharmacy personnel

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.3	66.5	18.8	14.4
Males	579	0.3	73.8	18.3	7.6
Females	545	0.2	58.9	19.3	21.6
Rural community pharmacists	377	1.5	70.3	18.4	9.8
Urban community pharmacists	551	0.9	33.2	19.6	46.3
Rural hospital pharmacists	27	0.0	48.2	10.0	41.7
Urban hospital pharmacists	70	0.0	29.3	13.7	57.0
Decade of registration					
1930s	14	0.0	78.6	21.4	0.0
1940s	68	0.0	76.5	13.2	10.3
1950s	196	0.5	78.1	11.2	10.3
1960s	259	0.0	69.5	18.5	12.0
1970s	584	0.3	59.8	22.1	17.8

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	2.6	22.5	74.6

Two-thirds of all pharmacists felt that personnel management was important. Male pharmacists placed the highest value on the skill while urban hospital valued it the lowest. Most pharmacists wanted it taught both in school and on-the-job.

TABLE 8

Applying principles of good management practice to pharmacy inventory control

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	80.2	10.7	8.5
Males	579	0.7	87.0	8.6	3.6
Females	545	0.0	73.4	12.8	13.8
Rural community pharmacists	377	1.4	81.5	10.9	6.2
Urban community pharmacists	551	1.3	82.8	10.5	5.4
Rural hospital pharmacists	27	0.0	80.8	7.5	11.7
Urban hospital pharmacists	70	0.0	63.6	11.8	24.6
Decade of registration					
1930s	14	0.0	92.8	7.1	0.0
1940s	68	0.0	92.7	4.4	2.9
1950s	196	1.0	86.2	7.7	5.1
1960s	259	0.0	83.0	8.9	8.1
1970s	584	0.3	75.5	13.5	10.7

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.5	1.2	27.1	71.2

Pharmacy inventory control was most important to male pharmacists. Urban hospital pharmacists placed the lowest value on the competency. When grouped by decade of registration, those pharmacists who registered in the 1930s and 1940s had the highest and second highest interest in inventory control, respectively. Nearly three-quarters of the pharmacists surveyed indicated that this competency should be taught both in school and on-the-job.

TABLE 9

Applying principles of good management practice to fiscal matters

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.5	56.7	12.8	22.0
Males	579	0.9	67.7	19.3	12.0
Females	545	0.2	45.0	22.4	32.5
Rural community pharmacists	377	3.0	61.5	20.7	14.8
Urban community pharmacists	551	1.6	56.1	21.6	20.7
Rural hospital pharmacists	27	0.0	45.3	14.0	40.7
Urban hospital pharmacists	70	0.0	42.1	20.8	37.1
Decade of registration					
1930s	14	0.0	57.1	28.6	14.3
1940s	68	1.5	63.2	22.1	13.2
1950s	196	1.0	76.0	12.8	10.2
1960s	259	0.4	61.1	20.1	18.6
1970s	584	0.3	47.4	23.5	28.8

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.5	4.8	25.1	69.6

When grouped by decade, the pharmacists registered in the 1950s were the largest single group that felt this competency was important, whdilel pharmacists registered in the 1970s, had the least interest. Overall lack of interest was highest in the urban hospital pharmacists. Most pharmacists felt it should be taught both in school and on-the-job.

TABLE 10

Interpreting and evaluating the accuracy and completeness of prescription orders

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	93.4	4.1	2.1
Males	579	0.5	91.5	5.7	2.3
Females	545	0.4	95.3	2.4	2.0
Rural community pharmacists	377	4.0	92.7	4.6	1.3
Urban community pharmacists	551	0.9	92.9	4.5	1.7
Rural hospital pharmacists	27	0.0	100.0	0.0	0.0
Urban hospital pharmacists	70	0.0	95.3	3.5	1.2
Decade of registration					
1930s	14	0.0	71.4	21.4	7.1
1940s	68	0.0	95.6	1.5	2.9
1950s	196	1.0	92.3	3.6	3.0
1960s	259	0.4	92.3	4.6	2.7
1970s	584	0.3	94.5	3.8	1.4

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	4.5	2.8	92.4

Interpreting and evaluating the accuracy and completeness of the prescription was highly valued by over ninety percent of all groups of pharmacists, with the exception of those registered in the 1930s. Most respondents felt that this competency should be taught both in school and on-the-job.

TABLE 11

Selecting appropriate ingredients, products, containers, brand and dosage form for drugs to be dispensed

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.5	88.2	6.3	5.0
Males	579	0.7	85.3	8.5	5.6
Females	545	0.4	91.2	4.0	4.4
Rural community pharmacists	377	2.0	87.0	7.1	3.9
Urban community pharmacists	551	0.8	90.1	5.1	4.0
Rural hospital pharmacists	27	0.0	84.6	9.1	6.3
Urban hospital pharmacists	70	0.0	81.3	11.1	7.6
Decade of registration					
1930s	14	0.0	78.5	14.3	7.1
1940s	68	1.5	89.7	4.4	4.4
1950s	196	0.5	89.7	4.6	5.1
1960s	259	1.2	85.7	6.6	6.6
1970s	584	0.2	88.7	6.8	4.3

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.4	3.6	7.6	88.5

The appropriate dispensing of drugs was considered to be most important by all pharmacists, but especially by females. Less than 8% of any group considered the competency not important. A large majority of all pharmacists thought this competency should be taught both in school and on-the-job.

TABLE 12

Preparing medications by measuring, counting or transferring the prescription

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.5	88.0	6.4	5.1
Males	579	0.5	86.6	7.1	5.9
Females	545	0.6	89.5	5.7	4.3
Rural community pharmacists	377	0.8	89.4	5.6	4.2
Urban community pharmacists	551	0.6	89.6	5.9	3.9
Rural hospital pharmacists	27	0.0	73.3	13.3	13.4
Urban hospital pharmacists	70	0.0	80.1	12.8	7.1
Decade of registration					
1930s	14	0.0	100.0	0.0	0.0
1940s	68	1.5	86.8	2.9	8.8
1950s	196	0.5	91.3	4.1	4.1
1960s	259	0.4	89.6	5.0	5.0
1970s	584	0.5	85.9	8.4	5.1

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.4	6.5	10.7	82.4

Preparing medications by measuring, counting or transferring the medication was valued highly by nearly ninety percent of all pharmacists and by all pharmacists registered in the 1930s. The largest group who thought the competency was unimportant were rural hospital pharmacists. This competency should be taught both in school and on-the-job, according to 82.4% of all pharmacists surveyed.

TABLE 13

Providing appropriate additional label information for the prescription to be dispensed

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	90.7	6.0	2.9
Males	579	0.7	87.6	7.9	3.8
Females	545	0.0	93.9	4.0	2.0
Rural community pharmacists	377	3.2	90.0	8.2	1.4
Urban community pharmacists	551	0.9	92.1	4.3	2.7
Rural hospital pharmacists	27	0.0	95.0	0.0	5.0
Urban hospital pharmacists	70	0.0	84.5	13.0	2.5
Decade of registration					
1930s	14	0.0	92.8	0.0	7.1
1940s	68	1.5	86.8	5.9	5.9
1950s	196	1.0	86.2	8.2	4.6
1960s	259	0.0	90.3	5.4	4.2
1970s	584	0.2	92.8	5.7	1.4

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	7.0	4.7	88.0

Additional label information was most important to rural hospital pharmacists and to pharmacists registered in the 1930s and 1970s. According to the results, this competency should be taught both in school and on-the-job.

TABLE 14

Preparing medication by compounding the prescription accurately

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	65.7	21.2	12.5
Males	579	0.5	64.6	20.2	14.7
Females	545	0.4	66.8	22.2	10.7
Rural community pharmacists	377	2.9	41.4	26.2	29.5
Urban community pharmacists	551	0.9	51.7	18.2	29.2
Rural hospital pharmacists	27	0.0	47.6	31.5	20.9
Urban hospital pharmacists	70	0.0	68.1	17.1	14.8
Decade of registration					
1930s	14	0.0	85.7	7.1	7.1
1940s	68	0.0	73.6	16.2	10.3
1950s	196	0.5	70.4	19.9	9.2
1960s	259	0.8	64.5	20.8	13.9
1970s	584	0.3	63.2	22.8	13.7

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.7	24.0	2.0	73.4

The table showed that registrants from the 1930s were the largest group who felt that the competency was important. Nearly two-thirds of the respondents who registered in the 1970s - the largest group in the study - felt this competency was important. The table showed that 73.4% of all pharmacists wanted the competency taught both in school and on-the-job.

TABLE 15

Performing drug control, storage and drug security functions involved in drug distribution

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	67.7	13.8	18.2
Males	579	0.3	66.1	14.2	19.3
Females	545	0.4	69.3	13.4	16.9
Rural community pharmacists	377	0.0	65.3	16.8	17.9
Urban community pharmacists	551	1.5	66.8	12.5	19.2
Rural hospital pharmacists	27	0.0	80.1	13.1	6.8
Urban hospital pharmacists	70	0.0	77.2	16.4	6.4
Decade of registration					
1930s	14	0.0	85.7	7.1	7.1
1940s	68	0.0	69.2	16.2	14.7
1950s	196	0.5	73.5	10.2	15.8
1960s	259	0.4	67.5	14.3	17.8
1970s	584	0.3	65.2	14.7	19.7

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.8	8.5	15.9	74.7

Rural and urban hospital pharmacists attached the highest importance to drug distribution, while the lowest importance was given by pharmacists registered in the 1970s, and male pharmacists. Nearly three quarters of the respondents reported that this competency should be acquired both in school and on-the-job.

TABLE 16

Consulting with, and advising patients about, the use and effects of prescribed medication as related to the patients' needs

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.3	86.8	9.0	4.0
Males	579	0.5	85.0	10.7	3.8
Females	545	0.0	88.7	7.2	4.3
Rural community pharmacists	377	0.0	85.5	9.8	4.7
Urban community pharmacists	551	1.3	87.2	8.6	2.9
Rural hospital pharmacists	27	0.0	84.3	13.1	2.6
Urban hospital pharmacists	70	0.0	87.2	6.6	6.2
Decade of registration					
1930s	14	0.0	64.3	28.6	7.1
1940s	68	0.0	80.9	10.3	8.8
1950s	196	0.5	86.7	9.2	3.6
1960s	259	0.4	83.7	10.4	5.4
1970s	584	0.2	89.4	7.5	2.9

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.4	6.6	2.3	90.7

Consulting with patients about prescribed medication was considered important by over 80% of all groups of respondents except those who registered in the 1930s. The table showed that most pharmacists felt this competency should be taught both in school and on-the-job.

TABLE 17

Communicating effectively with patients and customers

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.5	92.6	5.2	1.7
Males	579	0.6	91.9	6.2	1.4
Females	545	0.0	93.2	4.2	2.0
Rural community pharmacists	377	1.2	94.5	5.4	0.1
Urban community pharmacists	551	0.0	93.8	4.8	0.2
Rural hospital pharmacists	27	0.0	80.2	19.8	0.0
Urban hospital pharmacists	70	0.0	87.8	11.8	0.4
Decade of registration					
1930s	14	0.0	78.6	14.3	7.1
1940s	68	2.9	83.3	10.3	2.9
1950s	196	0.5	91.8	6.1	1.5
1960s	259	0.8	90.3	6.6	2.3
1970s	584	0.2	95.1	3.6	1.2

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.3	1.1	19.7	78.9

For eight out of twelve groups of pharmacists, effective communication was important to over 90% of the respondents. Only rural hospital pharmacists, urban hospital pharmacists, and registrants from the 1930s and 1940s placed less than 90% emphasis on this skill. A combination of school and on-the-job was chosen by nearly 80% as the preferred teaching site.

TABLE 18

Communicating effectively with other health professionals

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	86.7	10.6	2.3
Males	579	0.7	82.9	13.5	2.9
Females	545	0.2	90.6	7.5	1.7
Rural community pharmacists	377	1.0	86.1	11.0	1.9
Urban community pharmacists	551	1.7	84.9	12.0	1.4
Rural hospital pharmacists	27	0.0	100.0	0.0	0.0
Urban hospital pharmacists	70	0.0	95.0	4.6	0.1
Decade of registration					
1930s	14	0.0	57.1	28.6	14.3
1940s	68	0.0	73.6	22.1	4.4
1950s	196	0.5	89.3	7.7	2.6
1960s	259	0.8	86.8	9.7	2.7
1970s	584	0.3	88.2	9.9	1.6

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.4	1.4	20.8	77.4

Communicating effectively with other health professionals was highly important to all respondents. Over three-quarters of the pharmacists surveyed felt that effective communication should be taught both in school and on-the-job.

TABLE 19

Complying with all pharmacy practice laws, drug laws, pharmacy practice regulations and drug regulations

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.9	94.3	3.2	1.6
Males	579	0.9	93.2	4.5	1.4
Females	545	0.9	95.4	1.8	1.9
Rural community pharmacists	377	5.7	94.4	3.7	3.8
Urban community pharmacists	551	1.5	94.8	2.8	0.9
Rural hospital pharmacists	27	0.0	95.0	2.5	2.5
Urban hospital pharmacists	70	0.0	92.3	4.6	3.1
Decade of registration					
1930s	14	0.0	100.0	0.0	0.0
1940s	68	0.0	98.5	0.0	1.5
1950s	196	1.0	94.9	2.0	2.0
1960s	259	1.2	94.6	3.1	1.2
1970s	584	0.9	93.3	4.1	1.7

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.2	11.2	0.6	88.1

The table shows that more than 92% of the pharmacists in any of the categories considered compliance with laws and regulations to be important, and that 88.1% of respondents felt this competency should be acquired both in school and on-the-job.

TABLE 20

Complying with voluntary standards of practice and codes of ethics

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	89.2	7.5	2.9
Males	579	0.7	87.0	9.3	2.9
Females	545	0.2	91.4	5.5	3.2
Rural community pharmacists	377	1.2	90.0	7.8	1.0
Urban community pharmacists	551	1.5	89.4	7.3	1.8
Rural hospital pharmacists	27	0.0	93.5	4.0	2.5
Urban hospital pharmacists	70	0.0	81.8	7.3	10.9
Decade of registration					
1930s	14	0.0	92.8	7.1	0.0
1940s	68	1.5	91.2	5.9	1.5
1950s	196	0.5	93.4	3.1	3.0
1960s	259	0.4	88.0	9.3	2.3
1970s	584	0.3	88.0	8.2	3.4

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.2	7.2	8.4	84.3

Complying with voluntary standards of practice and codes of ethics was important for all groups. The responses ranged from a low of 81.8% for urban hospital pharmacists, to a high of 93.5% for rural hospital pharmacists. Total response was 84.3% in favor of combining school and on-the-job experience as teaching sites.

TABLE 21

Demonstrating appropriate professional and ethical judgement in interpretation of laws and regulations

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	73.7	18.2	7.7
Males	579	0.3	76.4	17.3	6.0
Females	545	0.4	71.0	19.3	9.4
Rural community pharmacists	377	0.0	69.4	23.2	7.4
Urban community pharmacists	551	1.2	75.6	16.6	6.6
Rural hospital pharmacists	27	33.3	55.5	23.6	12.4
Urban hospital pharmacists	70	0.0	77.7	12.5	9.8
Decade of registration					
1930s	14	0.0	64.3	21.4	14.3
1940s	68	0.0	67.6	17.6	14.7
1950s	196	0.5	77.5	13.8	8.2
1960s	259	0.8	75.7	17.8	5.8
1970s	584	0.2	72.4	20.0	7.4

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.2	10.6	13.3	75.9

Urban hospital pharmacists attached the most importance to demonstrating appropriate professional and ethical judgement in interpreting laws and regulations. Pharmacists who registered in the 1930s and 1940s gave the lowest value to this competency. The opinion of 75.9% of all pharmacists was that judgement in interpreting laws and regulations should be taught both in school and on-the-job.

TABLE 22

Identifying or locating appropriate drug information

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.4	69.3	24.1	6.3
Males	579	0.3	68.6	23.8	7.2
Females	545	0.4	70.0	24.4	5.4
Rural community pharmacists	377	1.0	69.1	22.2	7.7
Urban community pharmacists	551	1.2	65.5	28.2	5.1
Rural hospital pharmacists	27	0.0	88.3	9.1	2.6
Urban hospital pharmacists	70	0.0	89.2	12.8	2.0
Decade of registration	–				
1930s	14	0.0	57.1	21.4	21.4
1940s	68	0.0	70.6	23.5	5.9
1950s	196	1.0	74.0	18.9	6.1
1960s	259	0.4	72.5	21.2	5.8
1970s	584	0.2	66.5	27.2	6.2

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.6	12.2	9.8	77.4

Rural and urban hospital pharmacists placed the highest value on drug information. The next highest value was placed by pharmacists registered in the 1950s. Over three-quarters of the pharmacists felt that this competency should be taught both in school and on-the-job.

TABLE 23

Maintaining competencies through continuing education

Respondents	number resp.	no resp. %	imp. %	useful %	not imp. %
Total responses	1124	0.2	66.5	21.1	9.1
Males	579	0.3	69.6	24.5	11.4
Females	545	0.0	63.5	17.4	6.8
Rural community pharmacists	377	0.0	66.4	24.1	9.5
Urban community pharmacists	551	0.7	67.8	22.1	9.4
Rural hospital pharmacists	27	0.0	60.3	30.5	9.2
Urban hospital pharmacists	70	0.0	88.5	7.8	3.7
Decade of registration					
1930s	14	0.0	78.6	7.1	14.2
1940s	68	0.0	72.1	25.0	3.0
1950s	196	0.0	68.4	23.0	8.6
1960s	259	0.4	66.8	19.3	13.5
1970s	584	0.2	70.9	20.9	8.0

Teaching site	number resp.	no resp. %	in school %	o.t.j. %	both %
	1124	0.4	9.4	23.5	66.4

Continuing education was most important to urban hospital pharmacists and least important to 1930s registrants. The table shows that 66.4% of respondents felt the appropriate teaching site for this competency was a combination of school and on-the-job experience.

TABLE 24

Providing first aid or emergency treatment

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.3	86.7	10.4	2.6
Males	579	0.3	83.6	13.0	3.1
Females	545	0.2	89.9	7.7	2.2
Rural community pharmacists	377	1.5	85.9	13.2	2.6
Urban community pharmacists	551	0.7	85.9	10.5	3.3
Rural hospital pharmacists	27	0.0	100.0	0.0	0.0
Urban hospital pharmacists	70	0.0	94.8	5.2	0.0
Decade of registration					
1930s	14	0.0	64.3	28.6	7.1
1940s	68	0.0	91.1	7.4	1.5
1950s	196	0.5	79.1	16.3	4.1
1960s	259	0.4	97.7	10.0	1.9
1970s	584	0.2	88.7	8.6	2.6

The table showed that 86.7% of all pharmacists rarely gave first aid or emergency treatment. The largest number using this competency were the 1930s registrants, 7.1% of whom said they provided it all the time.

TABLE 25

Providing poison control and treatment information

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.1	80.5	14.5	4.9
Males	579	0.2	78.8	15.2	2.1
Females	545	0.0	82.2	13.8	4.0
Rural community pharmacists	377	0.0	85.1	11.3	3.6
Urban community pharmacists	551	0.0	81.2	14.4	4.4
Rural hospital pharmacists	27	0.0	59.5	29.0	11.5
Urban hospital pharmacists	70	0.4	70.3	21.8	7.9
Decade of registration					
1930s	14	0.0	64.3	21.4	14.2
1940s	68	0.0	80.9	14.7	4.4
1950s	196	0.5	72.4	18.9	8.1
1960s	259	0.0	84.5	11.2	4.2
1970s	584	0.0	81.5	14.4	4.1

Over 80% of pharmacists provided poison control and treatment information rarely. Rural pharmacists and pharmacists registered in the 1930s, were the groups who provided poison control and treatment information most often.

TABLE 26

Evaluating the relative therapeutic worth of medical-surgical supplies and devices

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.1	70.9	20.4	8.6
Males	579	0.2	66.3	23.0	10.6
Females	545	0.0	75.7	17.6	6.6
Rural community pharmacists	377	0.0	69.0	24.0	7.0
Urban community pharmacists	551	0.0	69.6	20.5	9.9
Rural hospital pharmacists	27	0.0	80.2	4.0	15.8
Urban hospital pharmacists	70	0.4	85.3	9.4	5.3
Decade of registration					
1930s	14	0.0	57.2	28.6	14.2
1940s	68	0.0	66.2	22.1	11.8
1950s	196	0.5	60.7	24.5	14.3
1960s	259	0.0	72.2	19.3	8.5
1970s	584	0.0	74.5	19.2	6.3

Pharmacists did not often evaluate the relative therapeutic worth of medical-surgical supplies and devices. Rural and urban hospital pharmacists provided the service least.

TABLE 27

Counselling patients about and fitting medical-surgical devices and supplies

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.1	78.8	15.5	5.8
Males	579	0.2	76.2	16.2	7.5
Females	545	0.0	81.3	14.7	4.1
Rural community pharmacists	377	0.0	75.2	18.6	6.2
Urban community pharmacists	551	0.4	77.3	16.2	6.5
Rural hospital pharmacists	27	0.0	95.0	5.0	0.0
Urban hospital pharmacists	70	0.0	95.3	4.7	0.0
Decade of registration					
1930s	14	0.0	64.3	35.7	0.0
1940s	68	0.0	79.4	13.2	7.3
1950s	196	0.5	73.0	15.3	11.2
1960s	259	0.0	82.2	12.4	5.4
1970s	584	0.0	79.1	16.8	4.1

Counselling patients about and fitting medical-surgical devices and supplies was done rarely by 78.8% of all pharmacists. Rural and urban hospital pharmacists provided counselling less than 5% of their time.

TABLE 28

Evaluating the chemical equivalency of drugs from different suppliers

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.4	50.6	21.5	27.6
Males	579	0.7	48.3	21.2	24.7
Females	545	0.0	52.9	21.8	25.3
Rural community pharmacists	377	1.4	54.2	20.9	24.9
Urban community pharmacists	551	0.9	49.5	22.7	27.8
Rural hospital pharmacists	27	0.0	33.1	18.3	48.6
Urban hospital pharmacists	70	0.0	50.5	16.5	33.0
Decade of registration					
1930s	14	0.0	57.1	21.4	21.4
1940s	68	0.0	58.8	16.2	25.0
1950s	196	1.0	42.8	24.5	31.6
1960s	259	0.4	46.0	23.2	30.5
1970s	584	0.2	54.1	20.4	23.5

Evaluating chemical equivalency was provided rarely by 50.6% of all pharmacists surveyed. However, 48.6% of rural hospital pharmacists evaluate the chemical equivalency of drugs from different manufacturers all the time.

TABLE 29

Evaluating the bioequivalency of drugs from different manufacturers

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.4	75.3	13.9	10.5
Males	579	0.5	73.6	14.0	11.9
Females	545	0.2	77.1	13.8	9.0
Rural community pharmacists	377	0.0	79.6	10.5	9.9
Urban community pharmacists	551	1.3	73.7	16.5	9.8
Rural hospital pharmacists	27	6.6	57.9	22.3	13.2
Urban hospital pharmacists	70	1.3	74.5	7.6	17.9
Decade of registration					
1930s	14	0.0	78.5	14.3	7.1
1940s	68	0.0	80.9	8.8	10.3
1950s	196	0.5	67.4	17.9	14.3
1960s	259	0.8	77.2	11.6	10.4
1970s	584	0.2	76.5	13.9	9.4

Evaluating bioequivalency of drugs is done rarely by 75.3% of all pharmacists, but 17.9% of urban hospital pharmacists perform this activity all the time.

TABLE 30

Performing bulk compounding, manufacturing, or packaging of drugs to legal and professional standards

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.3	77.5	9.7	12.6
Males	579	0.5	77.9	9.5	12.1
Females	545	0.0	77.1	9.9	13.1
Rural community pharmacists	377	0.0	82.3	9.6	8.1
Urban community pharmacists	551	0.6	79.8	7.5	12.7
Rural hospital pharmacists	27	0.0	58.6	24.6	16.8
Urban hospital pharmacists	70	0.0	45.4	23.5	31.1
Decade of registration					
1930s	14	0.0	78.6	7.1	14.2
1940s	68	0.0	80.9	7.4	11.8
1950s	196	0.5	75.5	9.7	14.4
1960s	259	0.4	78.3	10.8	10.4
1970s	584	0.2	77.2	9.6	13.0

Rural community pharmacists performed bulk compounding least often of any group, while 31.1% of urban hospital pharmacists performed this task all the time.

TABLE 31

Evaluating the effectiveness of drug therapy

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.5	61.4	23.2	14.8
Males	579	0.3	60.1	24.4	15.2
Females	545	0.7	62.7	22.0	14.5
Rural community pharmacists	377	0.7	64.5	20.6	14.1
Urban community pharmacists	551	0.6	63.7	23.9	11.8
Rural hospital pharmacists	27	0.0	55.6	18.1	26.3
Urban hospital pharmacists	70	0.0	43.2	29.6	27.2
Decade of registration					
1930s	14	0.0	50.0	21.4	28.6
1940s	68	1.5	69.2	20.6	8.8
1950s	196	0.5	58.7	28.1	12.8
1960s	259	0.4	64.8	18.5	16.2
1970s	584	0.5	59.9	24.1	15.4

Although nearly two-thirds of all pharmacists evaluated the effectiveness of drug therapy rarely, nearly one-third of both urban hospital pharmacists, and 1930's registrants used this competency all the time.

TABLE 32

Monitoring drug therapy

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.3	65.2	13.3	21.3
Males	579	0.5	67.7	13.3	18.5
Females	545	0.0	62.6	13.2	24.2
Rural community pharmacists	377	0.0	69.8	12.6	17.6
Urban community pharmacists	551	0.7	69.9	13.5	15.9
Rural hospital pharmacists	27	0.0	29.0	19.8	51.2
Urban hospital pharmacists	70	0.0	36.1	11.0	52.9
Decade of registration					
1930s	14	0.0	71.4	21.4	28.6
1940s	68	1.5	75.0	20.6	8.8
1950s	196	0.5	68.9	28.1	12.8
1960s	259	0.4	71.4	18.5	16.2
1970s	584	0.5	59.7	24.1	15.4

Rural and urban community pharmacists monitored drug therapy less frequently than any other group. More than 50% of rural and urban hospital pharmacists, however, monitored drug therapy all the time.

TABLE 33

Explaining the characteristics and procedures of pharmacy practice by types (role and setting) of pharmacy practice

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	1.2	76.7	14.6	7.5
Males	579	1.4	73.6	15.7	9.4
Females	545	0.9	80.2	13.4	5.5
Rural community pharmacists	377	0.7	78.9	14.4	6.0
Urban community pharmacists	551	0.9	78.8	13.3	7.0
Rural hospital pharmacists	27	6.5	68.8	14.0	10.7
Urban hospital pharmacists	70	0.0	67.5	18.3	14.2
Decade of registration					
1930s	14	0.0	85.7	14.3	0.0
1940s	68	1.5	86.8	7.4	4.4
1950s	196	1.0	77.0	12.2	9.7
1960s	259	1.5	78.8	13.9	5.8
1970s	584	1.0	74.3	16.6	8.0

Table 33 showed that female pharmacists were least involved in explaining the practice of pharmacy. In total, 76.7% of all pharmacists surveyed reported that they rarely explained pharmacy practice.

TABLE 34

Teaching or supervising pharmacist internes

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.5	73.4	14.6	11.5
Males	579	0.7	75.7	11.9	11.7
Females	545	0.4	71.0	17.4	11.2
Rural community pharmacists	377	1.1	70.4	6.6	21.9
Urban community pharmacists	551	0.0	69.6	17.6	12.0
Rural hospital pharmacists	27	0.0	92.5	2.5	5.0
Urban hospital pharmacists	70	0.0	64.5	18.9	16.6
Decade of registration					
1930s	14	0.0	78.5	7.1	14.2
1940s	68	0.0	86.8	8.8	4.4
1950s	196	1.0	68.3	14.8	15.8
1960s	259	0.4	76.8	12.0	10.0
1970s	584	0.5	72.0	16.6	10.9

Nearly three-quarters of all pharmacists taught internes rarely. Rural hospital pharmacists taught internes least often of all groups. The results showed, however, that 21.9% of rural community pharmacists taught or supervised pharmacist internes all the time.

TABLE 35

Applying the principles of research design to the design of investigational studies

Respondents	number resp.	no resp %	rarely %	occas %	all the time %
Total responses	1124	0.5	93.6	2.6	3.2
Males	579	0.9	93.4	1.9	3.8
Females	545	0.2	93.9	3.3	2.6
Rural community pharmacists	377	0.4	96.7	1.0	1.9
Urban community pharmacists	551	0.6	93.9	2.2	3.3
Rural hospital pharmacists	27	0.0	91.0	6.5	2.5
Urban hospital pharmacists	70	0.0	85.5	9.0	5.5
Decade of registration					
1930s	14	0.0	85.7	7.1	7.1
1940s	68	1.5	95.6	1.5	1.5
1950s	196	0.5	91.9	3.6	4.1
1960s	259	0.8	95.0	2.3	2.0
1970s	584	0.3	93.7	2.4	3.6

Research design was rarely practiced by 93.6% of all pharmacists. The groups which used this competency least often were urban hospital pharmacists and pharmacists registered in the 1930s.

V. CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

The objectives of this study were to analyse data collected from pharmacists practicing in Alberta in 1979. The study was intended to answer the following questions;

1. From a list of "SHOULD HAVE" competencies, which ones should be added to the education and training of the pharmacist.
2. From a list of "MUST HAVE" competencies, which ones are considered to be the MOST important to the practice of pharmacy.
3. From a list of "MUST HAVE" competencies, which ones are considered to be LEAST important to the practice of pharmacy.
4. Where should the competencies be taught?

When the responses were tabulated, only those competencies which received at least a 50% response were considered validated.

CONCLUSIONS

Eighteen "SHOULD HAVE" competencies were included on the questionnaire as possible new competencies or functions. The respondents were asked to decide if each new competency or function should become part of professional pharmacy practice. Out of the eighteen competencies, those shown in Tables 1 to 4 were valued by over 50% of the respondents as important enough to be added to professional practice.

Pharmacists generally placed a high value on prescribing selected drugs for minor ailments even though the word "prescribing" was used in the questionnaire, and is traditionally used to exclusively describe a physician's role. Rural pharmacists and women were particularly interested in prescribing for minor ailments. Rural pharmacists probably know their patients better than their colleagues in urban or hospital practice. Women, because they are usually part-time or relief pharmacists, perhaps do more actual dispensing and patient-counselling than men. The competency, however, is not only prescribing selected drugs for minor ailments but also evaluating symptoms before deciding whether to suggest medication or to refer the patient to a physician. Knowledge of the relative severity of symptoms, and the ability to evaluate those symptoms without actual physical examination are essential.

Hospital pharmacists had the most interest in operating a drug information service. They have the greatest opportunity of any group for access to patients' records, and for working with physicians and nurses. As a result, hospital pharmacists can act as drug information specialists in addition to their drug-distribution duties. Hospital pharmacists must become more skilled in retrieving information, evaluating data, and interpreting data to the health care giver; physician, nurse or dentist.

Hospital pharmacists wanted more than any other group to design dosage regimens based on prescribers' data. Their practice site offers them a unique opportunity for suggesting strengths, intervals of dosage, forms of medication, and duration of therapy. Over 50% of the total

respondents were pharmacists who registered in the 1970s. They were nearly 60% in favor of this competency. This group represents the perception of newer graduates for the appropriate role of the pharmacist in health care. Pharmacists' contributions will depend on their understanding of the pathophysiology of disease, the pharmacokinetics of the drug used, and the therapeutic rationale which the patient's condition dictates.

Rural hospital pharmacists are most interested in managing drug therapy in selected chronic diseases because rural hospitals may also operate an auxiliary hospital or a nursing home. Urban hospital pharmacists also work increasingly with patients who have chronic diseases, either because the patients are referred to urban tertiary care hospitals for short-term treatment of other ailments, or because of the specialty care given by their particular hospital. Pulmonary disease, diabetes, rheumatoid arthritis, and congestive heart failure are examples of chronic diseases which require an ability to interpret laboratory data. Patients with chronic diseases often have some organic impairment which compromises their ability to metabolize and excrete certain drugs. A comprehensive understanding of the pharmacology of the drugs used, coupled with a detailed knowledge of the particular disease is essential.

"MUST HAVE" competencies were listed in Tables 5 to 23. These "MUST HAVE" competencies are the respondents' opinions on what constitutes the essential competencies of the practicing pharmacist. If the curriculum

emphasized these competencies and abilities it would meet the basic performance needs of practicing pharmacists.

Consulting with patients on the selection, use and effects of over-the-counter drugs is a daily activity of most community pharmacists. Consulting is usually about the treatment of symptoms, such as those associated with the common cold. The pharmacist is often the first health care professional who sees the patient. Knapp et al. (1974) studied 3,000 patients and found that non-prescribed drugs were used by 70% of patients who had no doctor-contact in treatment of their symptoms. The skills required to counsel patients must be identified, taught, learned, and put into practice. Patient counselling must be both in the University curriculum and in the prospectus of the Division of Continuing Education.

The pharmacists who were most interested in applying the principles of good management practice to pharmacy operations were registered in the 1940s. They are likely to be owners and managers. The greater interest by males than females is probably for the same reason. Urban hospital pharmacists are mostly staff and therefore had the least interest in management practice. To be a manager requires an understanding of the relevance of the duties of the manager; planning, organizing, directing and controlling. Management theory must also be supplemented by experience if pharmacists are to become skilled managers.

Pharmacists were less interested in applying principles of good management practice to pharmacy personnel matters than to pharmacy oper-

ations. The range was from 12% to 30% less. Many pharmacists will become responsible upon graduation for directing the work of others. If pharmacists are to become drug information specialists then the time required must come from delegating tasks that can be performed under supervision by others. Interpersonal skills are essential for delegating tasks to technical and non-skilled staff and for evaluating their performance. Pharmacists must become more aware that the daily practice of the human relations skills that are found in psychology, sociology, and motivational theory is an essential part of their professional image.

Applying principles of good management practice to pharmacy inventory control was of greatest importance to male pharmacists and pharmacists who registered in the 1930s and 1940s. Those three groups are most likely to be owners and managers, with daily responsibility for inventory control. These pharmacists require an understanding of the costs associated with the purchase, holding and sale of all merchandise for the proprietary pharmacy operations. Maintaining an adequate inventory of prescription drugs while providing the best financial return is also very important to the pharmacist-owner/manager. By contrast, it is not surprising to find that urban hospital pharmacists showed the least interest in inventory control. Most of them have no responsibility for inventory.

Pharmacists who registered in the 1970s and hospital pharmacists were least interested in fiscal matters. Neither group would normally have responsibility for financing, budgetting or profit-and-loss state-

ments. Pharmacists who registered in the 1950s and male pharmacists were most interested in fiscal matters because those groups are the owners/managers. Applying principles of good management practice to fiscal matters requires the pharmacist to know which financial activities will require the services of a chartered accountant.

One of the main objectives of the pharmacist's professional education and training is interpreting and evaluating the accuracy and completeness of prescription orders. The response from the survey confirmed that the core curriculum must address this topic in depth.

Few pharmacists (less than 8% of any group) felt that selecting appropriate ingredients, products, containers, brand and dosage form for drugs to be dispensed was unimportant. That response is not surprising because this activity is, like the one before it, an essential component of the professional practice of pharmacy. The core curriculum must emphasise pharmaceuticsy, and stress bioequivalency, drug stability, and the competencies required for extemporaneous compounding.

Preparing medications by measuring, counting or transferring the prescription remains important to 88% of pharmacists. Rural hospital pharmacists attached the least importance to this competency. They are the most heavily involved in providing drug information, so they must seek ways to decrease their dispensing load.

Rural hospital pharmacists placed the highest importance on providing appropriate additional label information for the prescription to be

dispensed. This emphasis is consistent with their desire to engage in drug information activities. Over 90% of all pharmacists felt additional label information was important. Female pharmacists placed the second highest emphasis on additional label information because females are most likely to be dispensing, or providing relief and part-time help in Alberta pharmacies.

Preparing medication by compounding the prescription accurately was least highly valued by community pharmacists. The need to compound a prescription in the middle of a hectic dispensing day can severely hamper pharmacists' services. Pharmacists perceive their role as providers of drug information but compounding diverts their time and frustrates them. Compounding is seen as a necessary but time-consuming service. It also requires a combination of teaching sites to develop and reinforce the necessary skills.

Rural and urban hospital pharmacists gave the highest importance to drug control, storage and drug security functions involved in drug distribution. Pharmacists in hospital practice must be familiar with the legislation and are often required to implement policies for control and security in hospitals. Hospital pharmacists are usually in charge of large stocks of narcotics so they must maintain a comprehensive inventory control system.

Consulting and advising patients about the use and effects of prescribed medication as related to the patients' needs was almost equally important to all the respondents. Not only must pharmacists have knowl-

edge about drugs, but they must also be able to communicate that knowledge accurately to patients. It requires practice, beginning with lectures in the University, and supplemented by supervised experience with actual patients.

Communicating effectively with patients and customers was important to over 90% of the respondents in eight out of twelve categories. Hospital pharmacists and registrants from the 1930s and 1940s felt that the competency was less important. These groups have less opportunity to interact with patients, either because of their location in the hospital, or their activity in the pharmacy - as either owner or manager. Pharmacists must become aware of effective communication skills, including the significance of body language, the use of questions and answers to check for comprehension, rephrasing information received back to the giver, and a host of other techniques.

Hospital pharmacists placed the most importance on communicating effectively with other health professionals, but no responses placed less than 80% importance on this competency. Pharmacists must gain an understanding of how other health professionals are educated and trained, their professional objectives and goals, and their perception of their unique responsibility for providing health care.

Compliance with all pharmacy practice laws, drug laws, pharmacy practice regulations and drug regulations comes from a knowledge of those particular documents and schedules. Nearly 95% of the respondents felt that compliance was important.

Complying with voluntary standards of practice and codes of ethics was important to nearly 90% of all pharmacists. Compliance was least important to urban hospital pharmacists, perhaps because standards of practice and codes of ethics may have been interpreted as primarily for community pharmacists. Voluntary compliance is also dependent on professionalism which can be demonstrated as part of the learning experience. It is interesting to note that nearly 85% of the respondents were in favor of a combination of school and on-the-job experience as a teaching site.

The competencies necessary to demonstrate appropriate professional and ethical judgement in interpretation of laws and regulations, although based on a knowledge of the legislation, can best be developed in a practice setting where the behaviour can be observed and the necessary corrective action taken. Nearly three-quarters of all pharmacists felt that this competency was important. Urban hospital pharmacists, who are surrounded with internal and external legislation, placed the highest value on this competency. Urban hospitals are becoming more conscious of the potential for lawsuits, and pharmacists are more aware of their responsibility for sound professional and ethical judgement.

The pharmacist supports the most satisfying and yet the most demanding part of his professional role by identifying or locating appropriate drug information. Hospital pharmacists placed the highest value on locating drug information because they are most involved in providing it. Evaluating the literature is a learned skill, as is the use of the textbooks and educational materials within each pharmacy practice site.

Evaluation skills, taught in the university classroom, must be honed in supervised practice.

Continuing education credit is essential for licensure to practice the profession of pharmacy in Alberta. The question addressed the dilemma of maintaining competencies. Registrants can either attend for credit, which allows them to merely continue professional practice, or they can systematically update and improve competencies which will enhance their ability to provide a more comprehensive service to their patients. Urban hospital pharmacists gave the highest value to continuing education because they strive to identify and meet their needs for maintaining competencies. The relatively lower importance attached to continuing education by other respondents could be due to disenchantment with the requirement for continuing education or with the course offerings. A needs analysis is necessary to define and refine further the effectiveness of continuing education.

The "MUST HAVE" competencies which were practiced LEAST often by 50% of the respondents were listed in Tables 25 to 35. These responses indicated a need to reduce the emphasis on these competencies in the core curriculum.

Providing first-aid or emergency treatment is not usually performed by pharmacists, and therefore should be deleted from the curriculum.

Only hospital pharmacists are regularly engaged in providing poison control and treatment information. The role of the hospital pharmacist

in providing such information should be strengthened, but it is more suitable for continuing education, or as an option.

Over 70% of all pharmacists rarely evaluate the relative therapeutic worth of medical-surgical supplies and devices. The competency requires practice, skill and an indepth on-the-job study of the devices and materials. The limited number of teaching sites limits the number of students who can participate. The competency should be dropped from the curriculum and be taught in workshops or seminars to those pharmacists who need it.

This competency must be considered with the preceding one. Over 78% of all pharmacists do not counsel patients about and fit medical-surgical devices and supplies. The physical medicine and rehabilitation professionals who provide these services are highly trained to provide expert assistance. Pharmacists are therefore at a considerable disadvantage if this competency is not taught at an equivalent level. It is an appropriate topic for an intensive workshop/seminar.

Approximately half of all the respondents rarely evaluated the chemical equivalency of drugs from different suppliers. Although the theory may have to remain as part of the curriculum, half the graduates will never apply it. Evaluating the chemical equivalency of drugs from different suppliers requires laboratory facilities that are beyond the financial resources of the usual practice site.

Over three-quarters of all pharmacists rarely evaluated drug bioequivalency. The environment to evaluate the bioequivalency of drugs from different manufacturers should include both laboratory facilities and human volunteers. Such a research establishment is beyond the financial and scientific resources of all but major teaching hospitals or laboratories. This competency should be deleted from the curriculum for the undergraduate degree. Graduate students in a research career track are the appropriate recipients of education in bioequivalency evaluation.

There is a declining emphasis on motor skills such as performing bulk compounding, manufacturing, or packaging of drugs to legal and professional standards. Three-quarters of all pharmacists rarely call upon this skill in their practice. The pharmaceutical manufacturer, who can mechanize such processes, has assumed responsibility for almost all compounding, manufacturing, and packaging skills. Products that are not commercially available are manufactured extemporaneously by the individual practitioner. The curriculum should reflect this change, and meet the actual needs of the practitioners.

Over 60% of the respondents stated that they did not evaluate the effectiveness of drug therapy, perhaps perceiving physicians as more competent judges of this. This competency has components of drug information, that hospital pharmacists were most interested in providing. Most pharmacists, however, become community practitioners and do not have the same opportunity to participate in patient care. This competency should continue to be taught in the curriculum, but pharmacists

who desire advanced training could gain it through seminars and clinical workshops.

Monitoring drug therapy, although within the present capability of the average practitioner, may be only practical within an institutional setting. Approximately 65% of all practitioners rarely monitored drug therapy. Therefore the number of practitioners for whom this competency is appropriate is limited, making the competency more suitable as continuing education for those pharmacists who want it.

Explaining the characteristics and procedures of pharmacy practice by types (role and setting) of pharmacy practice, is a uniquely educational task, performed almost exclusively by members of the Faculty of Pharmacy and Pharmaceutical Sciences. Over three-quarters of other respondents had little opportunity to explain pharmacy practice.

The Alberta Pharmaceutical Association is responsible for interneship. Since this study was made, the interneship program has been expanded. It is now possible for all pharmacists in the province to participate in teaching or supervising internes. Training for preceptors and an instruction manual for both preceptors and internes have been established.

Nearly 94% of all pharmacists rarely applied the principles of research design to the design of investigational studies. In Alberta, this competency is uniquely applicable to large teaching hospitals, and

would be restricted to five hospitals or less, so the participation of the majority of pharmacists is severely restricted.

The opinions of pharmacists regarding the teaching site were predominantly in favor of a combination of in-school and on-the-job. In every case, except designing dosage regimens, the responses indicated that 60% or more of pharmacists felt that the combination was desirable.

RECOMMENDATIONS

It is recommended that the Curriculum Committee of the Faculty of Pharmacy and Pharmaceutical Sciences (CC) utilize the findings of this study to review the core curriculum. The comprehensive education and training of pharmacists is enhanced when the perceptions of practicing pharmacists are included in curriculum revisions.

It is recommended that the CC analyse the present curricula to see whether the competencies listed below are taught. This study found that pharmacists wanted these competencies to become part of the practice of pharmacy. They could be offered either in the undergraduate program or via continuing education.

1. Prescribing selected drugs for minor ailments
2. Operating a drug information service
3. Designing dosage regimens based on prescriber's data
4. Managing drug therapy in selected chronic diseases

It is recommended that those competencies listed below, perceived by the practitioners as the most important in sucessful professional practice, continue to be included in the training of undergraduate pharmacists. The curriculum should be reviewed to ensure that appropriate emphasis is being placed on these topics.

1. Consulting with patients on the selection, use and effects of over-the-counter drugs
2. Applying the principles of good management practice to pharmacy operations
3. Applying principles of good management practice to pharmacy personnel
4. Applying principles of good management practice to pharmacy inventory control
5. Applying principles of good management practice to fiscal matters
6. Interpreting and evaluating the accuracy and completeness of prescription orders
7. Selecting appropriate ingredients, products, containers, brand and dosage form for drugs to be dispensed
8. Preparing medications by measuring, counting or transferring the prescription
9. Providing appropriate additional label information for the prescription to be dispensed
10. Preparing medication by accurately compounding the prescription
11. Performing drug control, storage and drug security functions involved in drug distribution
12. Communicating effectively with patients and customers

13. Communicating effectively with other health professionals
14. Complying with all pharmacy practice laws, drug laws, pharmacy practice regulations and drug regulations
15. Complying with voluntary standards of practice and codes of ethics
16. Demonstrating appropriate professional and ethical judgement in interpretation of laws and regulations
17. Identifying or locating appropriate drug information
18. Maintaining competencies through continuing education

It is recommended that the following LEAST important competencies, be evaluated for deletion from the curriculum.

1. Providing first aid or emergency treatment
2. Providing poison control and treatment information
3. Evaluating the relative therapeutic worth of medical-surgical supplies and devices
4. Counselling patients about and fitting medical-surgical devices and supplies
5. Evaluating the chemical equivalency of drugs from different suppliers
6. Evaluating the bioequivalency of drugs from different manufacturers
7. Performing bulk compounding, manufacturing, or packaging of drugs to legal and professional standards
8. Evaluating the effectiveness of drug therapy
9. Monitoring drug therapy
10. Explaining the characteristics and procedures of pharmacy practice by types (role and setting) of pharmacy practice

11. Teaching or supervising pharmacist internes
12. Applying the principles of research design to the design of investigational studies

It is recommended that increased emphasis be placed on co-operative education so students can demonstrate competencies under the supervision of practicing pharmacists. The Professional Practice curricula are an important first step. Graduates are likely to integrate more efficiently into professional practice once they have applied their education in a work setting.

It is recommended that the Division of Continuing Education of the Faculty of Pharmacy and Pharmaceutical Sciences use this study for evaluating existing continuing education programs.

It is recommended that a comprehensive needs analysis be done by the Division of Continuing Education. Tables 24 to 35 indicate those competencies which are practiced least often by a majority of practitioners, but specific groups of pharmacists spend a high percentage of their time on those competencies. For example, 40% and 30% respectively, of rural and urban hospital pharmacists provide poison control and treatment information either occasionally or all the time; over 50% of urban hospital pharmacists compound, manufacture, or package drugs occasionally or all the time; more than 50% of rural and urban hospital pharmacists monitor drug therapy all the time. The needs of hospital pharmacists, as well as the other sub-groups should be identified and addressed. The Division of Continuing Education is uniquely equipped to

provide educational experiences which cannot be offered efficiently in the undergraduate years because of the low potential for registration.

It is recommended that the Division of Continuing Education explore distance education methods with Athabasca University, and teleconferencing technology with the Alberta Hospital Association to provide courses for rural pharmacists. The Alberta Hospital Association has installed teleconferencing equipment in its Edmonton office, and many hospitals in rural Alberta participate in the network.

It is recommended that the Division of Continuing Education develop courses with the Faculty of Extension, University of Alberta, on management, interpersonal skills, personnel management, and courses specifically designed for sub-groups of pharmacy practitioners.

It is recommended that the Alberta Pharmaceutical Association and the Faculty of Pharmacy and Pharmaceutical Sciences develop a more comprehensive method whereby practitioners may have regular input into curriculum development. The new interneship program and the increased use of practicing pharmacists for undergraduate teaching is encouraging.

It is recommended that this study be repeated to determine whether the perceptions of practicing pharmacists have changed since 1979.

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APPENDIX 1. LETTER FROM CURRICULUM COMMITTEE

I N T E R - D E P A R T M E N T A L C O R R E S P O N D E N C E

TO: Members of the Faculty DATE: May 17, 1979

FROM: Curriculum Committee

The Curriculum Committee is proposing to the Faculty that a series of carefully evaluated competencies be used as the basis for a comprehensive review of the present curriculum. It is the view of the Curriculum Committee that this would represent a more rational approach than a simple review of the present course offerings. The main reason for holding this view is that unless the Faculty has developed a series of overall aims and objectives for the program it is offering within the University, then it is not possible to conduct a rational review of the curriculum. The Curriculum Committee has assumed that there is at present an overall aim and purpose to the program currently in operation. However, it has been unable to clearly identify this in the documentation which has been made available to it so far.

In order to understand better the proposed approach, let us begin by assuming that our objective is to graduate competent pharmacists. This means that we have to attempt to define terms such as competence, or a state of competence, and competency.

Competence, or State of Competence, is an abstract concept such as an aptitude, or state of intelligence. Competence exists as an internal state acquired or learned by an individual. The potential for exhibiting competence exists if an individual has been exposed to the right conditions such as in school by training, or by experience. However, this potential can only be demonstrated and observed in given situations where the particular individual demonstrates a specific level of performance.

Competency may be defined as an intellectual, attitudinal and/or performance capability which has been derived and validated through analysis of professional practice in a variety of roles and settings. It is usually stated in terms of performance. Competencies may be single entities, or may be composed of a number of separate entities required to achieve a particular competency.

The College of Pharmacy at the University of Minnesota has had an extensive research project in this area for some years and Appendix IA contains a list of the competencies which they have validated for contemporary practice as 'must have' and 'should have' competencies. These competencies have been derived from a careful study of the activ-

ities of professionals actually practicing in a variety of community situations and in a hospital environment. Thus, these 'validated' competencies are the tasks a pharmacist actually performs in his, or her, day to day practice of the profession. The term validation refers to the fact that a performance capability has been observed and assessed by professional educators and the profession. Both these groups agree that this is a highly important performance capability making it a validated competency.

The Curriculum Committee is proposing that we validate a series of competencies for pharmacists practicing in Alberta. We propose to review the list of competencies prepared by the College of Pharmacy of the University of Minnesota and seek the opinion of the profession and the Faculty on the validity of these competencies. These validated competencies, validated in Alberta, would then form the basis for a review and assessment of our present core, or compulsory curriculum. Such a review would include relating the performance goals and objectives of a course, including its content and methods of instruction, to the validated competencies. The Curriculum Committee feels that the basic, or core, curriculum should ensure that we train a potentially competent pharmacist. That is to say that graduating students should meet acceptable professional performance standards.

The Curriculum Committee has evaluated two potential forms of curriculum review.

1. Conventional review

In this we assume that our present curriculum prepares a student to perform competently. We assume that the curriculum is in line with current pharmacy practice and that it has adapted to changes occurring within the profession. A curriculum review using this concept means looking at courses to see where there are areas of overlap, or where there are areas of omission, rectifying these situations, and then continuing the instructional process in the usual manner.

2. Review based on validated competencies

This implies a careful review of the performance objectives of the basic or core, curriculum to ensure that students who graduate demonstrate the level of professional competence and the competencies which the Faculty and the profession regard as essential.

It has to be recognized that such a review assumes that a validated competency may be acquired in a number of ways. Thus, a given competency may be acquired by several courses supporting the development of one particular competency, a single course supporting the development of more than one competency or a single course supporting a single competency. An example of how this all fits together and how one designs and evaluates the course content required to develop a specific competency is shown in Appendix I. Please remember this is intended only as an example and is not expected to be taken as a model for every particular competency.

Either form of review will, in all probability, result in changes to the core curriculum. It is important to remember that reviews of both types have both positive and negative aspects. Thus, while some material may be removed from the core curriculum and placed in an elective category, other material, at present given as part of an elective course, may become part of the core curriculum.

What would the evaluation and assessment of our present curriculum in terms of competencies mean in terms of changes to the present curriculum? It is probable that many courses will continue in their present form and sequence as it will be demonstrated that they relate to a specific competency or competencies. However, it is also probable that the instructional content of some of the present courses will remain the same though the sequence of presentation may change since it may be shown that some components support one competency and that other components support other competencies. Thus, it seems probable that most of the present content will be maintained but that there may be some changes to the order of delivery and, possibly, to the delivery system. However, any review of this, or any other, type seeks to eliminate, or recategorise, any unnecessary material from the <u>core</u> curriculum and to add <u>necessary</u> material to the <u>core</u> curriculum.

In summary, the Curriculum Committee feels that a competency based review of the core curriculum (that part of the curriculum which is designed to give pharmacists their basic level of knowledge and hence their basic level of competency) would result in this becoming a much more rationally based entity. Each pharmacist on graduation should be competent in areas which have been identified through a careful process of review of pharmacy practice in this province. However it is important to note that students will only have achieved a <u>basic</u> level of competence. In other words, this does not mean they will have achieved the pinnacle of competence but simply that they are competent to practice in the environment which exists in this province at this time. This clearly has important ramifications in the area of interneship and licensure and this will obviously have to be a matter to be looked at in some detail by the Interneship Committee of the Alberta Pharmaceutical Association. The rational basis so developed will also provide an ongoing model readily amenable to change and available for continued assessment of the curriculum as the need arises.

What this means in terms of the Faculty is that there will be a slightly different approach to the teaching of pharmacy at the present and future time. The Curriculum Committee has for example identified a number of deficiencies in the present training which pharmacists receive through our Faculty. These include deficiencies in the area of management, personnel management, communications skills, organization skills, and business skills. These are clearly areas in which considerable development may have to take place. The present system ties the student in to a very extensive core curriculum program. It is possible that, after a review based on the concepts which have been discussed and described, the core curriculum may become more truncated but become, at the same time, more practi-

cally orientated. This does not mean that students will not have the opportunity to extend their knowledge in other areas. It means that students may be able to choose options throughout the program rather than finding themselves tied into a heavy core course load throughout their time in the Faculty. In other words, enrolment in optional courses is unlikely to suffer as a result of the proposed changes. The Committee feels that it is essential that the basic material required to produce pharmacists with an acceptable level of competency must be included in the core curriculum. The Committee feels that is illogical to demand a series of options in order to bring this about.

A number of students have commented that the present curriculum is orientated primarily towards the production of graduate students. At the same time studies by the Alberta Pharmaceutical Association have shown that approximately 85% of the students who graduate from this Faculty will end up practicing some form of community pharmacy. It would seem rational, therefore, to orientate the training which we offer pharmacists towards the practice of community pharmacy. This means a much more extensive development of courses in the area of community pharmacy and much more practical emphasis in the area of community pharmacy. This is not to say that we will run ourselves out of graduate students but simply to say that we have to recognize that graduate students will come to us out of motivation and through a series of available options rather than through the basic undergradate training they receive.

This document is not intended as other than an introduction to the subject of competency and competency identification. If any Faculty member would like the opportunity of studying these materials further would they please ask Dr. Biggs to supply them with the relevant files.

CURRICULUM COMMITTEE

G. R. Van Petten, PhD, Dean & Chairman

D. F. Biggs, PhD., Faculty of Pharmacy, Clinical Division

Ms. Karen Hall, Student Representative

S. A. Lissack, BSc(Pharm), President, Alberta Pharmaceutical Association

R. E. Moskalyk, PhD, Associate Dean

A. Shysh, PhD, Faculty of Pharmacy, Science Division

COMPETENCIES VALIDATED FOR CONTEMPORARY PRACTICE ("MUST HAVE")

1. Evaluates chemical equivalency of multi-source drugs.
2. Evaluates bio-equivalency of multi-source drugs.
3. Performs bulk compounding, manufacturing and packaging of drugs according to legal and professional standards.
4. Interprets and evaluates accuracy and completeness of prescription orders.
5. Selects appropriate ingredients, products, container, brand and dosage form for drug to be dispensed.
6. Prepares medication accurately by measuring, counting or transferring the prescription.
7. Provides appropriate label information for prescriptions to be dispensed.
8. Evaluates OTC drug products.
9. Consults with patients on the selection, use and effects of OTC drugs.
10. Evaluates the relative therapeutic worth of medical-surgical devices and supplies.
11. Counsels patients in the selection, storage, and use of medical-surgical devices and supplies.
12. Consults with patients regarding uses and effects of legend drugs as related to their specific needs.
13. Identifies and locates appropriate drug information.
14. Evaluates and interprets pharmaceutical and medical literature.
15. Evaluates drug therapy.
16. Monitors drug therapy.
17. [1]Provides emergency first aid treatment.
18. Provides poison control and treatment information.
19. Refers patient to other health care professionals and agencies.

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[1] Competencies 17 and 28 were not validated in the job analysis and were not valued highly by respondents.

20. Communicates effectively and participates cooperatively with other health care team professionals.

21. Complies with all pharmacy practice laws, pharmacy practice regulations, and drug regulations.

22. Complies with voluntary practice standards and codes of ethics.

23. Demonstrates appropriate professional and ethical judgement in interpretation of laws and regulations.

24. Applies principles of good management practices to pharmacy personnel matters.

25. Applies principles of good management practices to pharmacy inventory control.

26. Applies principles of good management practices to pharmacy fiscal matters.

27. Maintains competencies through participation in (formal and informal) continuing education.

28. [1]Applies principles of research study design to the design of investigational drug studies.

29. Performs drug control, storage and drug security functions in drug distribution.

30. Demonstrates basic knowledge of the pathophysiology of disease.

31. Demonstrates knowledge of the various routes of drug administration.

32. Demonstrates knowledge of the principles of nutrition and their relationship to drug treatment.

33. Able to explain characteristics and procedures of pharmacy practice by types (role and setting) of pharmacy practice.

34. Prepares medication accurately by compounding the prescription.

35. Applies principles of good management practices to pharmacy operations.

36. Teaches and supervises pharmacist-internes.

COMPETENCIES EVALUATED FOR FUTURE PRACTICE ("SHOULD HAVE")

1. Prescribes selected drugs for temporary relief or minor health problems based on assessment of risk and benefits.

2. Designs individual dosage regimens based on the patient's clinical data furnished by the prescriber.

3. Manages drug therapy in selected chronic conditions.

4. Performs selected parts of physical examination necessary to evaluate drug therapy.

5. Obtains samples necessary for the conducting of laboratory tests to be used in monitoring drug therapy.

6. Provides basic life support techniques.

7. Provides medications and information and administers drug in emergencies.

8. Administers drugs by all the common routes.

9. Establishes and operates a Drug Information Service.

10. Develops and implements community health education programs.

11. Provides preventative community health services.

12. Participates actively in the health planning and policy setting processes and in their implementation.

13. Provides community and professional leadership and service.

14. Designs and implements IND[2] studies.

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[2] Pre-clinical studies to substantiate the safety of clinical testing.

FACULTY OF PHARMACY AND PHARMACEUTICAL SCIENCES
UNIVERSITY OF ALBERTA, EDMONTON, Alberta.

4.0 FACULTY COMMITTEES

4.1 CURRICULUM COMMITTEE

4.1.1 TERMS OF REFERENCE

Format of the Curriculum Committee. AGREED as follows:

1. A Curriculum Committee should be established to function as an ongoing basis

2. The role of the Committee should be to:

   a. establish a data base by possibly "upgrading the previous Curriculum Committee study".
   b. consider adjusting the format to coincide with the A.F.P.C. format study coming shortly.
   c. review the various teaching methods.
   d. review competency-based curriculum courses.
   e. review service courses.

STAFF: October 18, 1978

APPENDIX 2. AUGUST 1979 CURRICULUM QUESTIONNAIRE

The Faculty of Pharmacy and Pharmaceutical Sciences is undertaking a review of its basic or core curriculum. The review is being conducted by a Curriculum Committee made up of members of Faculty and the profession at large. The objective of this review is to revise the basic curriculum to ensure that students who graduate are competent to practice their chosen profession.

The Curriculum Committee is proposing to use a series of carefully evaluated 'competencies' as a basis for this review. Competencies are usually stated in terms of performance and thus set out the things a pharmacist actually does in the day-to-day practice of his or her profession. The potential for exhibiting a specific competence exists if an individual has been exposed to the right conditions, for example, in school through training, or by on-the-job experience. In order to develop a valid series of competencies for the practice of pharmacy in Alberta, the Curriculum Committee is asking each practicing pharmacist to evaluate his or her practice of the profession, to determine the things he or she does from day-to-day and to assess the relative importance of these activities in his or her particular environment. From these data, the Curriculum Committee will derive a series of basic competencies or competencies pharmacists must have in order to practice their profession. These competencies will be used to review the basic curriculum and to set objectives for the pharmacy program at the University of Alberta.

Accordingly, you, the practicing pharmacists, are being asked to complete a questionnaire and return it to the Faculty. Since this is, in essence, a process of self-evaluation it has been decided that 2 continuing education units will be awarded to those who return a properly completed questionnaire. Please take the time to offer your input on the training you received and to help shape the curriculum for future generations of students.

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

You will be asked a question (in block letters) relating to your practice of pharmacy.

A. Decide how often you use, or could use, each skill, or perform or could perform each function. Enter it on the computer answer sheet.

B. Decide where you learned, or could have learned, or acquired this competency or function and decide where you feel it is best taught or acquired. Enter this on the sheet.

C. Decide how important this competency or function is, or could be, to your practice of pharmacy. Enter this on the sheet.

D. If a possible new competency or function has been suggested you will then be asked to decide whether in your opinion this should become part of pharmacy practice. Enter this on your sheet.

PLEASE ANSWER ALL QUESTIONS. THANK YOU!

VITA

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University of Alberta
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1955-1959 Bachelor of Science in Pharmacy

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PUBLICATIONS:

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(2) Dixon, Herbert A., "Interprofessional Communication", Kerygma, January 1979.

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